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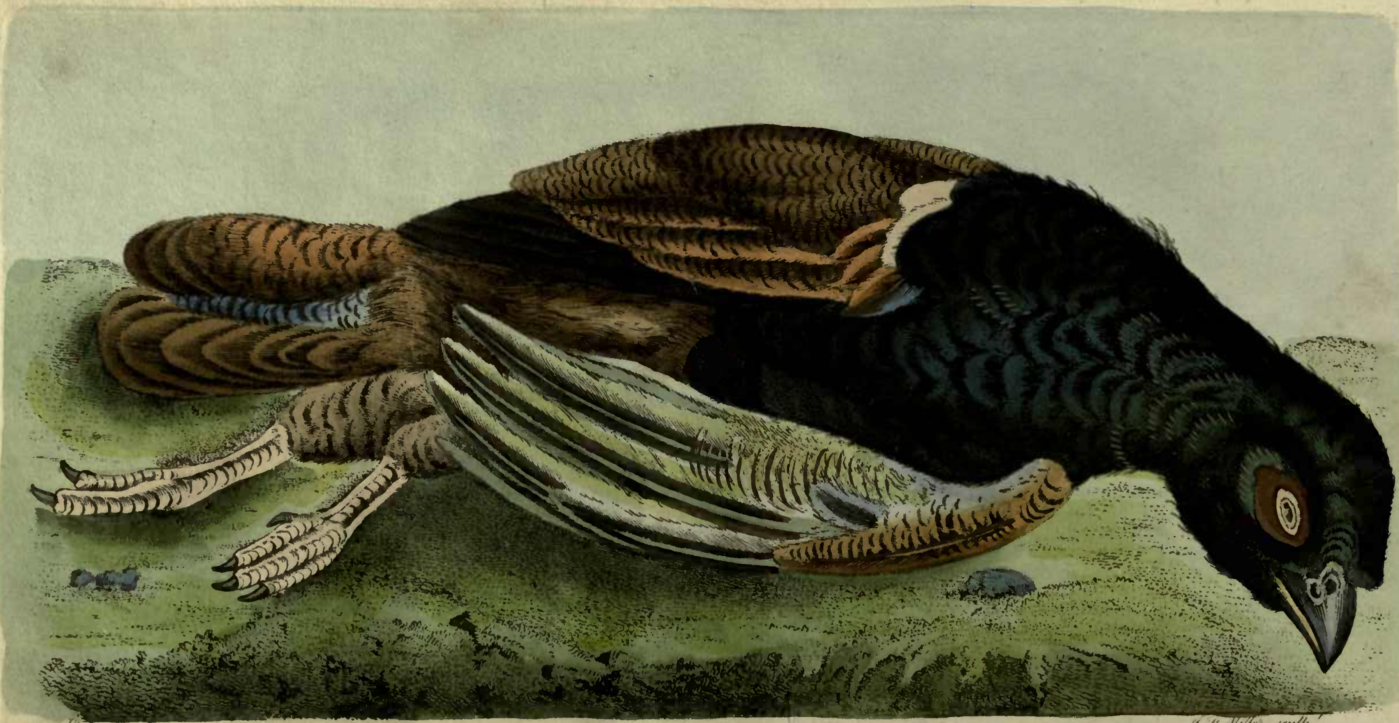
THE

NATURAL HISTORY

OF

SELBORNE,

&c. &c.



Elmer pinx! J.F. Miller sculp!

A HYBRID BIRD.

Vide p 212.

THE

NATURAL HISTORY

OF

SELBORNE,

BY THE LATE

Rev. GILBERT WHITE, A. M.

FELLOW OF ORIEL COLLEGE, OXFORD.

TO WHICH ARE ADDED,

THE NATURALIST'S CALENDAR,
MISCELLANEOUS OBSERVATIONS,
AND POEMS.

A NEW EDITION, WITH ENGRAVINGS.

IN TWO VOLUMES.

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THE
NATURAL HISTORY
OF
SELBORNE.

LETTER XXX.

TO THE
HONOURABLE DAINES BARRINGTON

DEAR SIR; SELBORNE, April 3, 1776.

MONSIEUR HERISSANT, a *French* anatomist, seems persuaded that he has discovered the reason why cuckoos do not hatch their own eggs; the impediment, he supposes, arises from the internal structure of their parts, which incapacitates them for incubation. According to this gentleman, the crop, or craw, of a cuckoo does not lie before the sternum at the bottom of the

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neck, as in the *gallinæ, columbæ,* &c. but immediately behind it, on and over the bowels, so as to make a large protuberance in the belly.*

Induced by this assertion, we procured a cuckoo: and, cutting open the breast-bone, and exposing the intestines to sight, found the crop lying as mentioned above. This stomach was large and round, and stuffed hard like a pincushion with food, which, upon nice examination, we found to consist of various insects; such as small scarabs, spiders, and dragon-flies; the last of which we have seen cuckoos catching on the wing as they were just emerging out of the aurelia state. Among this farrago also were to be seen maggots, and many seeds, which belonged either to gooseberries, currants, cranberries, or some such fruit; so that these birds apparently subsist on insects and fruits: nor was there the least appearance of bones, feathers, or fur, to support the idle notion of their being birds of prey.

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* *Histoire de l'Academie Royale,* 1752.

The sternum in this bird seemed to us to be remarkably short, between which and the anus lay the crop, or craw, and immediately behind that the bowels against the back-bone.

It must be allowed, as this anatomist observes, that the crop placed just upon the bowels must, especially when full, be in a very uneasy situation during the business of incubation; yet the test will be, to examine whether birds that are actually known to sit for certain are not formed in a similar manner. This inquiry I proposed to myself to make with a *fern-owl,* or goat-sucker, as soon as opportunity offered: because, if their formation proves the same, the reason for incapacity in the cuckoo will be allowed to have been taken up somewhat hastily.

Not long after a fern-owl was procured, which, from its habit and shape, we suspected might resemble the cuckoo in its internal construction. Nor were our suspicions ill-grounded; for, upon the dissection, the crop, or craw, also lay behind the sternum, immediately on the viscera, between them and the skin of the belly. It was bulky, and stuffed hard with large *phalænæ*, moths of several sorts, and their eggs, which no doubt had been forced out of those insects by the action of swallowing.

Now as it appears that this bird, which is so well known to practise incubation, is formed in a similar manner with cuckoos, Monsieur *Herissant*'s conjecture, that cuckoos are incapable of incubation from the disposition of their intestines, seems to fall to the ground: and we are still at a loss for the cause of that strange and singular peculiarity in the instance of the *cuculus canorus*.

We found the case to be the same with the ring-tail hawk, in respect to formation; and, as far as I can recollect, with the swift; and probably it is so with many more sorts of birds that are not granivorous.

I am, &c.

LETTER XXXI.

TO THE SAME.

DEAR SIR; SELBORNE, April 29, 1776.

On *August* the 4th, 1775, we surprised a large viper, which seemed very heavy and bloated, as it lay in the grass basking in the sun. When we came to cut it up, we found that the abdomen was crowded with young, fifteen in number; the shortest of which measured full seven inches, and were about the size of full-grown earthworms. This little fry issued into the world with the true viper-spirit about them, showing great alertness as soon as disengaged from the belly of the dam: they twisted and wriggled about, and set themselves up, and gaped very wide when touched with a stick, showing manifest tokens of menace and defiance, though as yet they had no manner of fangs that we could find, even with the help of our glasses.

To a thinking mind nothing is more wonderful than that early instinct which impresses young animals with the notion of the situation of their natural weapons, and of using them properly in their own defence, even before those weapons subsist or are formed. Thus a young cock will spar at his adversary before his spurs are grown; and a calf or a lamb will push with their heads before their horns are sprouted. In the same manner did these young adders attempt to bite before their fangs were in being. The dam however was furnished with very formidable ones, which we lifted up (for they fold down when not used) and cut them off with the point of our scissars.

There was little room to suppose that this brood had ever been in the open air before; and that they were taken in for refuge, at the mouth of the dam, when she perceived that danger was approaching;

because then probably we should have found them somewhere in the neck, and not in the abdomen.

LETTER XXXII.

TO THE SAME.

Castration has a strange effect: it emasculates both man, beast, and bird, and brings them to a near resemblance of the other sex. Thus eunuchs have smooth unmuscular arms, thighs, and legs; and broad hips, and beardless chins, and squeaking voices. Gelt-stags and bucks have hornless heads, like hinds and does. Thus wethers have small horns, like ewes; and oxen large bent horns, and hoarse voices when they low, like cows: for bulls have short straight horns; and though they mutter and grumble in a deep tremendous tone, yet they low in a shrill high key. Capons have small combs and gills, and look pallid about the head, like pullets; they also walk without any parade, and hover chickens like hens. Barrow-hogs have also small tusks like sows.

Thus far it is plain that the deprivation of *masculine vigour* puts a stop to the growth of those parts or appendages that are looked upon as its insignia. But the ingenious Mr. *Lisle*, in his book on husbandry, carries it much farther; for he says that the loss of those insignia alone has sometimes a strange effect on the ability itself: he had a boar so fierce and venereous, that to prevent mischief, orders were given for his tusks to be broken off. No sooner had the beast suffered this injury than his powers forsook him, and he neglected those females to whom before he was passionately attached, and from whom no fences could restrain him.

LETTER XXXIII.

TO THE SAME.

The natural term of an hog's life is little known, and the reason is plain—because it is neither profitable nor convenient to keep that turbulent animal to the full extent of its time: however, my neighbour, a man of substance, who had no occasion to study every little advantage to a nicety, kept an half-bred Bantam-sow, who was as thick as she was long, and whose belly swept on the ground till she was advanced to her seventeenth year; at which period she showed some tokens of age by the decay of her teeth and the decline of her fertility.

For about ten years this prolific mother produced two litters in the year of about ten at a time, and once above twenty at a litter; but, as there were near double the number of pigs to that of teats, many died. From long experience in the world this female was grown very sagacious and artful;—when she found occasion to converse with a boar she used to open all the intervening gates, and march, by herself, up to a distant farm where one was kept; and when her purpose was served would return by the same means. At the age of about fifteen her litters began to be reduced to four or five; and such a litter she exhibited when in her fatting-pen. She proved, when fat, good bacon, juicy, and tender; the rind, or sward, was remarkably thin. At a moderate computation she was allowed to have been the fruitful parent of three hundred pigs: a prodigious instance of fecundity in so large a quadruped! She was killed in Spring 1775.

I am, &c.

LETTER XXXIV.

TO THE SAME.

DEAR SIR; SELBORNE, May 9, 1776.

" ——————— admorunt ubera tigres."

We have remarked in a former letter how much incongruous animals, in a lonely state, may be attached to each other from a spirit of sociality; in this it may not be amiss to recount a different motive which has been known to create as strange a fondness.

My friend had a little helpless *leveret* brought to him, which the servants fed with milk in a spoon, and about the same time his cat kittened and the young were dispatched and buried. The hare was soon lost, and supposed to be gone the way of most fondlings, to be killed by some dog or cat. However, in about a fortnight, as the master was sitting in his garden in the dusk of the evening, he observed his cat, with tail erect, trotting towards him, and calling with little short inward notes of complacency, such as they use towards their kittens, and something gamboling after, which proved to be the leveret that the cat had supported with her milk, and continued to support with great affection.

Thus was a graminivorous animal nurtured by a carnivorous and predaceous one!

Why so cruel and sanguinary a beast as a cat, of the ferocious genus of *Feles*, the *murium leo*, as *Linnæus* calls it, should be affected with any tenderness towards an animal which is its natural prey, is not so easy to determine.

This strange affection probably was occasioned by that desiderium, those tender maternal feelings, which the loss of her kittens had awakened in her breast; and by the complacency and ease she derived to herself from the procuring her teats to be drawn, which were too much distended with milk, till, from habit, she became as much delighted with this foundling as if it had been her real offspring.

This incident is no bad solution of that strange circumstance which grave historians as well as the poets assert, of exposed children being sometimes nurtured by female wild beasts that probably had lost their young. For it is not one whit more marvellous that *Romulus* and *Remus,* in their infant state, should be nursed by a she-wolf, than that a poor little sucking leveret should be fostered and cherished by a bloody grimalkin.

———— " viridi fœtam Mavortis in antro
" Procubuisse lupam: geminos huic ubera circum
" Ludere pendentes pueros, et lambere matrem
" Impavidos: illam tereti cervice reflexam
" Mulcere alternos, et corpora fingere linguâ."

LETTER XXXV.

TO THE SAME.

DEAR SIR; SELBORNE, May 20, 1777.

LANDS that are subject to frequent inundations are always poor; and probably the reason may be because the worms are drowned. The most insignificant insects and reptiles are of much more consequence, and have much more influence in the œconomy of Nature, than the incurious are aware of; and are mighty in their effect, from their minuteness, which renders them less an object of attention; and from their numbers and fecundity. Earth-worms, though in appearance a small and despicable link in the chain of Nature, yet, if lost, would make a lamentable chasm. For, to say nothing of half the birds, and some quadrupeds which are almost entirely supported by them, worms seem to be great promoters of vegetation, which would proceed but lamely without them, by boring, perforating, and loosening the soil, and rendering it pervious to rains and the fibres of plants, by drawing straws and stalks of leaves and twigs into it; and, most of all, by throwing up such infinite numbers of lumps of earth called worm-casts, which, being their excrement, is a fine manure for grain and grass. Worms probably provide new soil for hills and slopes where the rain washes the earth away; and they affect slopes, probably to avoid being flooded. Gardeners and farmers express their detestation of worms; the former because they render their walks unsightly, and make them much work: and the latter because, as they think, worms eat their green corn. But these men would find that the earth without worms would soon become cold, hard-bound, and void of fermentation; and consequently steril: and besides, in favour of worms, it should be hinted that green corn, plants, and flowers, are not so much injured by them as by many species of *co-*

leoptera (scarabs), and *tipulæ,* (long-legs) in their larva, or grub-state; and by unnoticed myriads of small shell-less snails, called slugs, which silently and imperceptibly make amazing havock in the field and garden.*

These hints we think proper to throw out in order to set the inquisitive and discerning to work.

A good monography of worms would afford much entertainment and information at the same time, and would open a large and new field in natural history. Worms work most in the Spring; but by no means lie torpid in the dead months; are out every mild night in the Winter, as any person may be convinced that will take the pains to examine his grass-plots with a candle; are hermaphrodites, and much addicted to venery, and consequently very prolific.

I am, &c.

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* Farmer *Young*, of *Norton-farm*, says that this Spring (1777) about four acres of his wheat in one field was entirely destroyed by *slugs*, which swarmed on the blades of corn, and devoured it as fast as it sprang.

LETTER XXXVI.

TO THE SAME.

DEAR SIR; Selborne, Nov. 22, 1777.

You cannot but remember that the twenty-sixth and twenty-seventh of last *March* were very hot days; so sultry that every body complained and were restless under those sensations to which they had not been reconciled by gradual approaches.

This sudden Summer-like heat was attended by many Summer coincidences; for on those two days the thermometer rose to sixty-six in the shade; many species of insects revived and came forth; some bees swarmed in this neighbourhood; the old tortoise, near *Lewes* in *Sussex*, awakened and came forth out of its dormitory: and, what is most to my present purpose, many *house-swallows* appeared and were very alert in many places, and particularly at *Cobham*, in *Surrey*.

But as that short warm period was succeeded as well as preceded by harsh severe weather, with frequent frosts and ice, and cutting winds, the insects withdrew, the tortoise retired again into the ground, and the swallows were seen no more until the tenth of *April*, when, the rigour of the Spring abating, a softer season began to prevail.

Again; it appears by my journals for many years past, that *house-martins* retire, to a bird, about the beginning of *October*; so that a person not very observant of such matters would conclude that they had taken their last farewell: but then it may be seen in my diaries also that considerable flocks have discovered themselves again in the first week of *November*, and often on the fourth day of that month only *for one day*; and that not as if they were in actual migration, but playing about at their leisure and feeding calmly, as if no enterprize of moment at all agitated their spirits. And this was the case in the beginning of this very month; for, on the fourth of *No-*

vember, more than twenty house-martins, which, in appearance, had all departed about the seventh of *October*, were seen again, for that *one morning only*, sporting between my fields and *the Hanger*, and feasting on insects which swarmed in that sheltered district. The preceding day was wet and blustering, but the fourth was dark and mild, and soft, the wind at south-west, and the thermometer at 58½; a pitch not common at that season of the year. Moreover, it may not be amiss to add in this place, that whenever the thermometer is above 50, the bat comes flitting out in every Autumnal and Winter-month.

From all these circumstances laid together, it is obvious that torpid insects, reptiles, and quadrupeds, are awakened from their profoundest slumbers by a little untimely warmth; and therefore that nothing so much promotes this death-like stupor as a defect of heat. And farther, it is reasonable to suppose that two whole species, or at least many individuals of those two species, of *British hirundines*, do never leave this island at all, but partake of the same benumbed state: for we cannot suppose that, after a month's absence, house-martins can return from southern regions to appear for *one* morning in *November*, or that house-swallows should leave the districts of *Africa* to enjoy, in *March*, the transient Summer of a *couple* of days. I am, &c.

LETTER XXXVII.

TO THE SAME.

DEAR SIR; SELBORNE, Jan. 8, 1778.

THERE was in this village several years ago a miserable pauper, who, from his birth, was afflicted with a leprosy, as far as we are aware, of a singular kind, since it affected only the palms of his hands and the soles of his feet. This scaly eruption usually broke out twice in the year, at the Spring and fall; and, by peeling away, left the skin so thin and tender that neither his hands nor feet were able to perform their functions; so that the poor object was half his time on crutches, incapable of employ, and languishing in a tiresome state of indolence and inactivity. His habit was lean, lank, and cadaverous. In this sad plight he dragged on a miserable existence, a burden to himself and his parish, which was obliged to support him till he was relieved by death at more than thirty years of age.

The good women, who love to account for every defect in children by the doctrine of longing, said that his mother felt a violent propensity for oysters, which she was unable to gratify; and that the black rough scurf on his hands and feet were the shells of that fish. We knew his parents, neither of which were lepers; his father in particular lived to be far advanced in years.

In all ages the leprosy has made dreadful havock among mankind. The *Israelites* seem to have been greatly afflicted with it from the most remote times; as appears from the peculiar and repeated injunctions given them in the *Levitical* law.* Nor was the rancour of this foul disorder much abated in the last period of their commonwealth, as may be seen in many passages of the New Testament.

Some centuries ago this horrible distemper prevailed all *Europe* over; and our forefathers were by no means exempt, as appears by the large provision made for objects labouring under this calamity. There was an hospital for female lepers in the diocese of *Lincoln*, a noble one near *Durham*, three in *London* and *Southwark*, and perhaps many more in or near our great towns and cities. Moreover, some crowned heads, and other wealthy and charitable personages, bequeathed large legacies to such poor people as languished under this hopeless infirmity.

It must therefore, in these days, be, to an humane and thinking person, a matter of equal wonder and satisfaction, when he contemplates how nearly this pest is eradicated, and observes that a leper now is a rare sight. He will, moreover, when engaged in such a train of thought, naturally inquire for the reason. This happy change perhaps may have originated and been continued from the much smaller quantity of salted meat and fish now eaten in these kingdoms; from the use of linen next the skin; from the plenty of better bread; and from the profusion of fruits, roots, legumes, and greens, so common in every family. Three or four centuries ago, before there were any enclosures, sown-grasses, field-turnips, or field-carrots, or hay, all the cattle which had grown fat in Summer, and were not killed for Winter-use, were turned out soon after *Michaelmas* to shift as they could through the dead months; so that no fresh meat could be had in Winter or Spring. Hence the marvellous account of the vast stores of salted flesh found in the larder of the eldest *Spencer*[*] in the days of *Edward* the Second, even so late in the Spring as the third of *May*. It was from magazines like these that the turbulent barons supported in idleness their riotous swarms of retainers ready for any disorder or mischief. But agriculture is now arrived at such a pitch of perfection, that our best and fattest meats are killed in the Winter: and no man needs eat salted flesh, unless he prefers it, that has money to buy fresh.

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* See Leviticus, chap. xiii. and xiv.

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[*] *Viz.* Six hundred bacons, eighty carcasses of beef, and six hundred muttons.

One cause of this distemper might be, no doubt, the quantity of wretched fresh and salt fish consumed by the commonalty at all seasons as well as in Lent; which our poor now would hardly be persuaded to touch.

The use of linen changes, shirts or shifts, in the room of sordid and filthy woollen, long worn next the skin, is a matter of neatness comparatively modern; but must prove a great means of preventing cutaneous ails. At this very time woollen instead of linen prevails among the poorer *Welch*, who are subject to foul eruptions.

The plenty of good wheaten bread that

now is found among all ranks of people in the south, instead of that miserable sort which used in old days to be made of barley or beans, may contribute not a little to the sweetening their blood and correcting their juices; for the inhabitants of mountainous districts, to this day, are still liable to the itch and other cutaneous disorders, from a wretchedness and poverty of diet.

As to the produce of a garden, every middle-aged person of observation may perceive, within his own memory, both in town and country, how vastly the consumption of vegetables is increased. Green-stalls in cities now support multitudes in a comfortable state, while gardeners get fortunes. Every decent labourer also has his garden, which is half his support, as well as his delight; and common farmers provide plenty of beans, peas, and greens, for their hinds to eat with their bacon; and those few that do not are despised for their sordid parsimony, and looked upon as regardless of the welfare of their dependants. Potatoes have prevailed in this little district, by means of premiums, within these twenty years only; and are much esteemed here now by the poor, who would scarce have ventured to taste them in the last reign.

Our *Saxon* ancestors certainly had some sort of cabbage, because they call the month of *February sprout-cale;* but, long after their days, the cultivation of gardens was little attended to. The religious, being men of leisure, and keeping up a constant correspondence with *Italy*, were the first people among us that had gardens and fruit-trees in any perfection, within the walls of their abbies* and priories. The *barons* neglected every pursuit that did not lead to war or tend to the pleasure of the chase.

It was not till gentlemen took up the study of horticulture themselves that the knowledge of gardening made such hasty advances. Lord *Cobham*, Lord *Ila*, and Mr. *Waller* of *Beaconsfield*, were some of the first people of rank that promoted the elegant science of ornamenting without despising the superintendence of the kitchen quarters and fruit walls.

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* "In *monasteries* the lamp of knowledge continued "to burn, however dimly. In them men of business "were formed for the state: the art of writing was "cultivated by the *monks;* they were the only pro"ficients in mechanics, *gardening*, and architecture."

See *Dalrymple's* Annals of *Scotland.*

A remark made by the excellent Mr. *Ray* in his Tour of *Europe* at once surprises us, and corroborates what has been advanced above; for we find him observing, so late as his days, that " the *Italians* use several " herbs for sallets, which *are not yet* or " have not been but *lately* used in *England*, " viz. *selleri* (celery) which is nothing else " but the sweet smallage; the young shoots " whereof, with a little of the head of the " root cut off, they eat raw with oil and " pepper." And farther he adds " *curled* " *endive* blanched is much used beyond " seas; and, for a raw sallet, seemed to " excel lettuce itself." Now this journey was undertaken no longer ago than in the year 1663.

I am, &c.

LETTER XXXVIII.

TO THE SAME.

" Fortè puer, comitum seductas ab agmine fido,
" Dixerat, ecquis adest ? et, adest, responderat echo.
" Hic stupet ; utque aciem partes divisit in omnes ;
" Voce, veni, clamat magnâ. Vocat illa vocantem."

DEAR SIR; SELBORNE, Feb. 12, 1778.

IN a district so diversified as this, so full of hollow vales and hanging woods, it is no wonder that echoes should abound. Many we have discovered that return the cry of a pack of dogs, the notes of a hunting-horn, a tunable ring of bells or the melody of birds, very agreeably : but we were still at a loss for a polysyllabical, articulate echo, till a young gentleman, who had parted from his company in a Summer evening walk, and was calling after them, stumbled upon a very curious one in a spot where it might least be expected. At first he was much surprised, and could not be persuaded but that he was mocked by some boy; but, repeating his trials in several languages, and finding his respondent to be a very adroit polyglot, he then discerned the deception.

This echo in an evening, before rural noises cease, would repeat ten syllables most articulately and distinctly, especially if quick dactyls were chosen. The last syllables of

> "Tityre, tu patulæ recubans——"

were as audibly and intelligibly returned as the first: and there is no doubt, could trial have been made, but that at midnight, when the air is very elastic, and a dead stillness prevails, one or two syllables more might have been obtained: but the distance rendered so late an experiment very inconvenient.

Quick dactyls, we observed, succeeded best; for when we came to try its powers in slow, heavy, embarrassed spondees of the same number of syllables,

> "Monstrum horrendum, informe, ingens——"

we could perceive a return but of four or five.

All echoes have some one place to which they are returned stronger and more distinct than to any other; and that is always the place that lies at right angles with the object of repercussion, and is not too near, nor too far off. Buildings, or naked rocks, re-echo much more articulately than hanging wood or vales; because in the latter the voice is as it were entangled, and embarrassed in the covert, and weakened in the rebound.

The true object of this echo, as we found by various experiments, is the stone-built, tiled hop-kiln in *Gally-Lane,* which measures in front 40 feet, and from the ground to the eaves 12 feet. The true *centrum phonicum,* or just distance, is one particular spot in the *King's-field,* in the path to *Norehill,* on the very brink of the steep balk above the hollow cart way. In this case there is no choice of distance; but the path, by mere contingency, happens to be the lucky, the identical spot, because the ground rises or falls so immediately, if the speaker either retires or advances, that his mouth would at once be above or below the object.

We measured this polysyllabical echo with great exactness, and found the distance to fall very short of Dr. *Plot*'s rule for distinct articulation: for the Doctor in his history of *Oxfordshire,* allows 120 feet for the return of each syllable distinctly: hence this echo, which gives ten distinct syllables, ought to measure 400 yards, or 120 feet, to each syllable; whereas our distance is only 258 yards, or near 75 feet, to each syllable. Thus our measure falls short of the Doctor's, as five to eight: but then it must be acknowledged that this candid philosopher was convinced afterwards, that some latitude must be admitted of in the distance of echoes according to time and place.

When experiments of this sort are making it should always be remembered that weather and the time of day have a vast influence on an echo; for a dull, heavy, moist air deadens and clogs the sound; and hot sunshine renders the air thin and weak, and deprives it of all its springiness; and a ruffling wind quite defeats the whole. In a still, clear, dewy evening the air is most elastic; and perhaps the later the hour the more so.

Echo has always been so amusing to the imagination, that the poets have personified her; and in their hands she has been the occasion of many a beautiful fiction. Nor need the gravest man be ashamed to appear taken with such a phænomenon, since it may become the subject of philosophical or mathematical inquiries.

One should have imagined that echoes, if not entertaining, must at least have been harmless and inoffensive; yet *Virgil* advances a strange notion, that they are injurious to bees. After enumerating some probable and reasonable annoyances, such as prudent owners would wish far removed from their bee-gardens, he adds

> " ——————————— aut ubi concava pulsu
> " Saxa sonant, vocisque offensa resultat imago."

This wild and fanciful assertion will hardly be admitted by the philosophers of these days; especially as they all now seem agreed that insects are not furnished with any organs of hearing at all. But if it should be urged, that though they cannot *hear* yet perhaps they may *feel* the repercussion of sounds, I grant it is possible they may. Yet that these impressions are distasteful or hurtful, I deny, because bees, in good Summers, thrive well in my outlet, where the echoes are very strong: for this village is another *Anathoth*, a place of *responses* or *echoes*. Besides, it does not appear from experiment that bees are in any way capable of being affected by sounds: for I have often tried my own with a large speaking-trumpet held close to their hives, and with such an exertion of voice as would have hailed a ship at the distance of a mile, and still these insects pursued their various employments undisturbed, and without showing the least sensibility or resentment.

Some time since its discovery this echo is become totally silent, though the object, or hop-kiln, remains: nor is there any mystery in this defect; for the field between is planted as an hop-garden, and the voice of the speaker is totally absorbed and lost among the poles and entangled foliage of the hops. And when the poles are removed in Autumn the disappointment is the same; because a tall quick-set hedge, nurtured up for the purpose of shelter to the hop ground, entirely interrupts the impulse and repercussion of the voice: so that till those obstructions are removed no more of its garrulity can be expected.

Should any gentleman of fortune think an echo in his park or outlet a pleasing incident, he might *build* one at little or no expense. For whenever he had occasion for a new barn, stable, dog-kennel, or the like structure, it would be only needful to erect this building on the gentle declivity of an hill, with a like rising opposite to it, at a few hundred yards distance; and perhaps success might be the easier ensured could some canal, lake, or stream, intervene. From a seat at the *centrum phonicum* he and his friends might amuse themselves sometimes of an evening with the prattle of this loquacious nymph; of whose complacency and decent reserve more may be said than can with truth of every individual of her sex; since she is

" ————————— quæ nec *reticere* loquenti,
" Nec *prior* ipsa *loqui* didicit resonabilis echo."

I am, &c.

P. S. The classic reader will, I trust, pardon the following lovely quotation, so finely describing echoes, and so poetically accounting for their causes from popular superstition:

" Quæ benè quom videas, rationem reddere possis
" Tute tibi atque aliis, quo pacto per loca sola
" Saxa pareis formas verborum ex ordine reddant,
" Palanteis comites quom monteis inter opacos
" Quærimus, et magnâ dispersos voce ciemus.
" Sex etiam, aut septem loca vidi reddere voces
" Unam quom jaceres: ita colles collibus ipsis
" Verba repulsantes iterabant dicta referre.
" Hæc loca capripedes Satyros, Nymphasque tenere
" Finitimi fingunt, et Faunos esse loquuntur;
" Quorum noctivago strepitu, ludoque jocanti
" Adfirmant volgo taciturna silentia rumpi,
" Chordarumque sonos fieri, dulceisque querelas,
" Tibia quas fundit digitis pulsata canentum:

" Et genus agricolûm latè sentiscere, quom Pan
" Pinea semiferi capitis velamina quassans,
" Unco sæpe labro calamos percurrit hianteis,
" Fistula silvestrem ne cesset fundere musam."

Lucretius, Lib. iv. l. 576.

LETTER XXXIX.

TO THE SAME.

DEAR SIR; SELBORNE, May 13, 1778.

AMONG the many singularities attending those amusing birds the *swifts*, I am now confirmed in the opinion that we have every year the same number of pairs invariably; at least the result of my inquiry has been exactly the same for a long time past. The swallows and martins are so numerous, and so widely distributed over the village, that it is hardly possible to recount them; while the swifts, though they do not all build in the church, yet so frequently haunt it, and play and rendezvous round it, that they are easily enumerated. The number that I constantly find are *eight pairs;* about half of which reside in the church, and the rest build in some of the lowest and meanest thatched cottages. Now as these eight pairs, allowance being made for accidents, breed yearly eight pairs more, what becomes annually of this increase; and what determines every Spring which pairs shall visit us, and reoccupy their ancient haunts?

Ever since I have attended to the subject of ornithology, I have always supposed that that sudden reverse of affection, that strange αντιστοργη which immediately succeeds in the feathered kind to the most passionate fondness, is the occasion of an equal dispersion of birds over the face of the earth. Without this provision one favourite district would be crowded with inhabitants, while others would be destitute and forsaken. But the parent birds seem to maintain a jealous superiority, and to oblige the young to seek for new abodes; and the rivalry of the males, in many kinds, prevents their crowding the one on the other. Whether the swallows and house-martins return in the same exact number annually is not easy to say, for reasons given above: but it is apparent, as I have remarked before in my Monographies, that the numbers returning bear no manner of proportion to the numbers retiring.

LETTER XL.

TO THE SAME.

DEAR SIR; SELBORNE, June 2, 1778.

THE standing objection to botany has always been, that it is a pursuit that amuses the fancy and exercises the memory, without improving the mind or advancing any real knowledge: and, where the science is carried no farther than a mere systematic classification, the charge is but too true. But the botanist that is desirous of wiping off this aspersion should be by no means content with a list of names; he should study plants philosophically, should investigate the laws of vegetation, should examine the powers and virtues of efficacious herbs, should promote their cultivation; and graft the gardener, the planter, and the husbandman, on the phytologist. Not that system is by any means to be thrown aside; without system the field of Nature would be a pathless wilderness: but system should be subservient to, not the main object of, pursuit.

Vegetation is highly worthy of our attention; and in itself is of the utmost consequence to mankind, and productive of many of the greatest comforts and elegancies of life. To plants we owe timber, bread, beer, honey, wine, oil, linen, cotton, &c. what not only strengthens our hearts, and exhilarates our spirits, but what secures us from inclemencies of weather and adorns our persons. Man, in his true state of nature, seems to be subsisted by spontaneous vegetation: in middle climes, where grasses prevail, he mixes some animal food with the produce of the field and garden: and it is towards the polar extremes only that, like his kindred bears and wolves, he gorges himself with flesh alone, and is driven to what hunger has never been known to compel the very beasts, to prey on his own species.*

The productions of vegetation have had a vast influence on the commerce of nations, and have been the great promoters of navigation, as may be seen in the articles of sugar, tea, tobacco, opium, ginseng, betel, paper, &c. As every climate has its peculiar produce, our natural wants bring on a mutual intercourse; so that by means of trade each distant part is supplied with the growth of every latitude. But, without the knowledge of plants and their culture, we must have been content with our hips and haws, without enjoying the delicate fruits of *India* and the salutiferous drugs of *Peru*.

Instead of examining the minute distinctions of every various species of each obscure genus, the botanist should endeavour to make himself acquainted with those that are useful. You shall see a man readily ascertain every herb of the field, yet hardly know wheat from barley, or at least one sort of wheat or barley from another.

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* See the late Voyages to the South-seas.

But of all sorts of vegetation the *grasses* seem to be most neglected; neither the farmer nor the grazier seem to distinguish the annual from the perennial, the hardy from the tender, nor the succulent and nutritive from the dry and juiceless.

The study of grasses would be of great consequence to a northerly, and grazing kingdom. The botanist that could improve the swerd of the district where he lived, would be an useful member of society: to raise a thick turf on a naked soil would be worth volumes of systematic knowledge; and he would be the best commonwealth's man that could occasion the growth of "*two blades of grass* where *one* alone was "seen before."

I am, &c.

LETTER XLI.

TO THE SAME.

DEAR SIR; Selborne, July 3, 1778.

In a district so diversified with such a variety of hill and dale, aspects, and soils, it is no wonder that great choice of plants should be found. Chalks, clays, sands, sheep-walks and downs, bogs, heaths, woodlands, and champaign fields, cannot but furnish an ample *Flora*. The deep rocky lanes abound with *filices*, and the pastures and moist woods with *fungi*. If in any branch of botany we may seem to be wanting, it must be in the large aquatic plants, which are not to be expected on a spot far removed from rivers, and lying up amidst the hill country at the spring heads. To enumerate all the plants that have been discovered within our limits would be a needless work; but a short list of the more rare, and the spots where they are to be found, may be neither unacceptable nor unentertaining:—

Helleborus fœtidus, stinking hellebore, bear's foot, or setterwort, all over the *High-wood* and *Coney-croft-hanger:* this continues a great branching plant the Winter through, blossoming about *January*, and is very ornamental in shady walks and shrubberies. The good women give the leaves powdered to children troubled with worms; but it is a violent remedy, and ought to be administered with caution.

Helleborus viridis, green hellebore,—in the deep stony lane on the left hand just before the turning to *Norton farm,* and at the top of *Middle Dorton* under the hedge: this plant dies down to the ground early in Autumn, and springs again about *February*, flowering almost as soon as it appears above ground.

Vaccinium oxycoccus, creeping bilberries, or cranberries,—in the bogs of *Bin's-pond;*

Vaccinium myrtillus, whortle, or bilberries,—on the dry hillocks of *Wolmer-forest ;*

Drossera rotundifolia, round-leaved sundew. In the bogs of *Bin's-pond ;*

Drosera longifolia, long-leaved sundew,—in the bogs of *Bins's-pond ;*

Comarum palustre, purple comarum, or marsh cinque foil,—in the bogs of *Bin's-pond ;*

Hypericum androsæmum, Tutsan, St. John's Wort,—in the stony, hollow lanes;

Vinca minor, less periwinkle,—in *Selborne-hanger* and *Shrub-wood ;*

Monotropa hypopithys, yellow monotropa, or bird's nest,—in *Selborne-hanger* under the shady beeches, to whose roots it seems to be parasitical—at the north-west end of the *Hanger ;*

Chlora perfoliata, Blackstonia perfoliata, Hudsoni, perfoliated yellow-wort,—on the banks in the *King's-field ;*

Paris quadrifolia, herb Paris, true-love, or one-berry,—in the *Church-litten-coppice ;*

Chrysosplenium oppositifolium, opposite golden saxifrage,—in the dark and rocky hollow lanes;

Gentiana amarella, Autumnal gentian, or fellwort,—on the *Ziz-zag* and *Hanger;*

Lathræa squammaria, tooth-wort,—in the *Church-litten-coppice* under some hazels near the foot-bridge, in *Trimming*'s garden hedge, and on the dry wall opposite *Grange-yard;*

Dipsacus pilosus, small teasel,—in the *Short* and *Long Lith.*

Lathyrus sylvestris, narrow-leaved, or wild lathyrus,—in the bushes at the foot of the *Short Lith*, near the path;

Ophrys spiralis, ladies traces,—in the *Long Lith*, and towards the south-corner of the common;

Ophrys nidus avis, bird's nest ophrys,—in the *Long Lith* under the shady beeches among the dead leaves; in *Great Dorton* among the bushes, and on the *Hanger* plentifully;

Serapias latifolia, helleborine,—in the *High-wood* under the shady beeches;

Daphne laureola, spurge laurel, in *Selborne-Hanger* and the *High-wood ;*

Daphne mezereum, the mezereon,—in *Selborne-Hanger* among the shrubs at the south-east end above the cottages ;

Lycoperdon tuber, truffles,—in the *Hanger* and *High-wood ;*

Sambucus ebulus, dwarf elder, walwort, or danewort,—among the rubbish and ruined foundations of the *Priory*.

Of all the propensities of plants none seem more strange than their different periods of blossoming. Some produce their flowers in the Winter, or very first dawnings of Spring ; many when the Spring is established ; some at Midsummer, and some not till Autumn. When we see the *helleborus fœtidus* and *helleborus niger* blowing at Christmas, the *helleborus hyemalis* in January, and the *helleborus viridis* as soon as ever it emerges out of the ground, we do not wonder, because they are kindred plants that we expect should keep pace the one with the other. But other congenerous vegetables differ so widely in their time of flowering, that we cannot but admire. I shall only instance at present in the *crocus sativus*, the vernal, and the Autumnal crocus, which have such an affinity, that the best botanists only make them varieties of the same *genus*, of which there is only one *species;* not being able to discern any difference in the *corolla*, or in the internal structure. Yet the *vernal crocus* expands its flowers by the beginning of March at farthest, and often in very rigorous weather; and cannot be retarded but by some violence offered:—while the *autumnal* (the *Saffron)* defies the influence of the Spring and Summer, and will not blow till most plants begin to fade and run to seed. This circumstance is one of the wonders of the creation, little noticed, because a common occurrence: yet ought not to be overlooked on account of its being familiar, since it would be as difficult to be explained as the most stupendous phænomenon in nature.

Say, what impels, amidst surrounding snow
Congeal'd, the *crocus'* flamy bud to glow?
Say, what retards, amidst the Summer's blaze,
Th' *autumnal bulb*, till pale, declining days?
The GOD of SEASONS; whose pervading power
Controls the sun, or sheds the fleecy shower:
He bids each flower his quick'ning word obey;
Or to each lingering bloom enjoins delay.

LETTER XLII.

TO THE SAME.

" Omnibus animalibus reliquis certus et uniusmodi,
" et in suo cuique genere incessus est: aves solæ vario
" meatu feruntur, et in terrâ, et in äere."

PLIN. Hist. Nat. lib. x. cap. 38.

DEAR SIR; SELBORNE, Aug. 7, 1778.

A GOOD ornithologist should be able to distinguish birds by their air as well as by their colours and shape; on the ground as well as on the wing, and in the bush as well as in the hand. For, though it must not be said that every *species* of birds has a manner peculiar to itself, yet there is somewhat in most *genera* at least, that at first sight discriminates them, and enables a judicious observer to pronounce upon them with some certainty. Put a bird in motion

"—— Et vera incessu patuit ————"

Thus *kites* and *buzzards* sail round in circles with wings expanded and motionless; and it is from their gliding manner that the former are still called in the north of *England gleads*, from the *Saxon* verb *glidan*, to glide. The *kestrel* or *wind-hover*, has a peculiar mode of hanging in the air in one place, his wings all the while being briskly agitated. *Hen-harriers* fly low over heaths or fields of corn, and beat the ground regularly like a pointer or setting-dog. *Owls* move in a buoyant manner, as if lighter than the air; they seem to want ballast. There is a peculiarity belonging to *ravens* that must draw the attention even of the most incurious—they spend all their leisure time in striking and cuffing each other on the wing in a kind of playful skirmish ; and, when they move from one place to another, frequently turn on their backs with a loud croak, and seem to be falling to the ground. When this odd gesture betides them, they are scratching themselves with one foot, and thus lose the center of gravity. *Rooks* sometimes dive and tumble in a frolicksome manner ; *crows* and *daws* swagger in their walk ; *wood-peckers* fly *volatu undoso,* opening and closing their wings at every stroke, and so are always rising or falling in curves. All of this genus use their tails, which incline downward, as a support while they run up trees. *Parrots,* like all other hooked-clawed birds, walk aukwardly, and make use of their bill as a third foot, climbing and descending with ridiculous caution. All the *gallinæ* parade and walk gracefully, and run nimbly ; but fly with difficulty, with an impetuous whirring, and in a straight line. *Magpies* and *jays* flutter with powerless wings, and make no dispatch ; *herons* seem incumbered with too much sail for their light bodies ; but these vast hollow wings are necessary in carrying burdens, such as large fishes, and the like; *pigeons*, and particularly the sort called *smiters*, have a way of clashing their wings the one against the other over their backs with a loud snap; another variety called *tumblers* turn themselves over in the air. Some birds have movements peculiar to the season of love: thus *ring-doves*, though strong and rapid at other times, yet in the Spring hang about on the wing in a toying and playful manner; thus the *cock-snipe*, while breeding, forgetting his former flight, fans the air like the wind-hover; and the *green-finch* in particular exhibits such languishing and faultering gestures as to appear like a wounded and dying bird; the *king-fisher* darts along like an arrow; *fern-owls*, or *goat-suckers*, glance in the dusk over the tops of trees like a meteor: *starlings*, as it were, swim along, while *missel-thrushes* use a wild and desultory flight; *swallows* sweep over the surface of the ground and water, and distinguish themselves by rapid turns and quick evolutions; *swifts* dash round in circles; and the *bank-martin* moves with frequent vacillations like a butterfly. Most of the small birds fly by jerks, rising and falling as they advance. Most small birds hop; but *wagtails* and *larks* walk, moving their legs alternately. *Skylarks* rise and fall perpendicularly as they sing; *woodlarks* hang poised in the air; and *titlarks* rise and fall in large curves, singing in their descent. The *white-throat* uses odd jerks and gesticulations over the tops of hedges and bushes. All the *duck-kind* waddle; *divers* and *auks* walk as if fettered, and stand erect on their tails: these are the *compedes* of *Linnæus*. *Geese* and *cranes*, and most wild-fowls, move in figured flights, often changing their position. The secondary *remiges* of *Tringæ, wild ducks*, and some others, are very long, and give their wings, when in motion, an hooked appearance. *Dab-chicks, moor-hens*, and *coots*, fly erect, with their legs hanging down, and hardly make any dispatch; the reason is plain, their wings are placed too forward out of the true centre of gravity; as the legs of *auks* and *divers* are situated too backward.

LETTER XLIII.

TO THE SAME.

DEAR SIR; SELBORNE, Sept. 9, 1778.

FROM the motion of birds, the transition is natural enough to their notes and language, of which I shall say something. Not that I would pretend to understand their language like the *vizier;* who, by the recital of a conversation which passed between two owls, reclaimed a sultan,* before delighting in conquest and devastation; but I would be thought only to mean that many of the winged tribes have various sounds and voices adapted to express their various passions, wants, and feelings; such as anger, fear, love, hatred, hunger, and the like. All species are not equally eloquent; some are copious and fluent as it were in their utterance, while others are confined to a few important sounds: no bird, like the fish kind, is quite mute, though some are rather silent. The language of birds is very ancient, and, like other ancient modes of speech, very elliptical; little is said, but much is meant and understood.

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* See Spectator, Vol. VII, No. 512.

The notes of the eagle-kind are shrill and piercing; and about the season of nidification much diversified, as I have been often assured by a curious observer of Nature, who long resided at *Gibraltar*, where eagles abound. The notes of our *hawks* much resemble those of the king of birds. *Owls* have very expressive notes; they hoot in a fine vocal sound, much resembling the *vox humana*, and reducible by a pitch-pipe to a musical key. This note seems to express complacency and rivalry among the males: they use also a quick call and an horrible scream; and can snore and hiss when they mean to menace. *Ravens*, besides their loud croak, can exert a deep and solemn note that makes the woods to echo; the amorous sound of a *crow* is strange and ridiculous; *rooks,* in the breeding season, attempt sometimes in the gaiety of their hearts to sing, but with no great success; the *parrot*-kind have many modulations of voice, as appears by their aptitude to learn human sounds; *doves* coo in an amorous and mournful manner, and are emblems of despairing lovers; the *woodpecker* sets up a sort of loud and hearty laugh; the *fern-owl,* or *goat-sucker,* from the dusk till day-break, serenades his mate with the clattering of castanets. All the tuneful *passeres* express their complacency by sweet modulations, and a variety of melody. The *swallow,* as has been observed in a former letter, by a shrill alarm bespeaks the attention of the other *hirundines,* and bids them be aware that the hawk is at hand. Aquatic and gregarious birds, especially the nocturnal, that shift their quarters in the dark, are very noisy and loquacious; as cranes, wild-geese, wild ducks, and the like: their perpetual clamour prevents them from dispersing and losing their companions.

In so extensive a subject, sketches and outlines are as much as can be expected; for it would be endless to instance in all the infinite variety of the feathered nation. We shall therefore confine the remainder of this letter to the few domestic fowls of our yards, which are most known, and therefore best understood. And first the *peacock*, with his gorgeous train, demands our attention; but, like most of the gaudy birds, his notes are grating and shocking to the ear: the yelling of cats, and the braying of an ass, are not more disgustful. The voice of the *goose* is trumpet-like, and clanking; and once saved the Capitol at *Rome*, as grave historians assert: the hiss also of the *gander* is formidable and full of menace, and "protective of his young." Among *ducks* the sexual distinction of voice is remarkable; for, while the *quack* of the female is loud and sonorous, the voice of the *drake* is inward and harsh, and feeble, and scarce discernible. The cock *turkey* struts and gobbles to his mistress in a most uncouth manner; he hath also a pert and petulant note when he attacks his adversary. When a hen *turkey* leads forth her young brood she keeps a watchful eye: and if a bird of prey appear, though ever so high in the air, the careful mother announces the enemy with a little inward moan, and watches him with a steady and attentive look; but, if he approach, her note becomes earnest and alarming, and her outcries are redoubled.

No inhabitants of a yard seem possessed of such a variety of expression and so copious a language as common poultry. Take a chicken of four or five days old, and hold it up to a window where there are flies, and it will immediately seize its prey, with little twitterings of complacency; but if you tender it a wasp or a bee, at once its note becomes harsh, and expressive of disapprobation and a sense of danger. When a pullet is ready to lay, she intimates the event by a joyous and easy soft note.

Of all the occurrences of their life that of *laying* seems to be the most important; for no sooner has a hen disburdened herself, than she rushes forth with a clamorous kind of joy, which the cock and the rest of his mistresses immediately adopt. The tumult is not confined to the family concerned, but catches from yard to yard, and spreads to every homestead within hearing, till at last the whole village is in an uproar. As soon as a hen becomes a mother her new relation demands a new language; she then runs clucking and screaming about, and seems agitated as if possessed. The father of the flock has also a considerable vocabulary; if he finds food, he calls a favourite concubine to partake; and if a bird of prey passes over with a warning voice he bids his family beware. The gallant *chanticleer* has, at command, his amorous phrases and his terms of defiance. But the sound by which he is best known is his *crowing:* by this he has been distinguished in all ages as the countryman's clock or larum, as the watchman that proclaims the divisions of the night. Thus the poet elegantly styles him

> " —— the crested cock, whose clarion sounds
> " The silent hours."

A neighbouring gentleman one Summer had lost most of his chickens by a sparrow-hawk, that came gliding down between a faggot pile and the end of his house to the place where the coops stood. The owner inwardly vexed to see his flock thus diminishing, hung a setting net adroitly between the pile and the house, into which the caitif dashed, and was entangled. Resentment suggested the law of retaliation; he therefore clipped the hawk's wings, cut off his talons, and, fixing a cork on his bill, threw him down among the brood-hens. Imagination cannot paint the scene that ensued; the expressions that fear, rage, and revenge, inspired, were new, or at least such as had been unnoticed before: the exasperated matrons upbraided, they execrated, they insulted, they triumphed.

In a word, they never desisted from buffeting their adversary till they had torn him in an hundred pieces.

LETTER XLIV.

TO THE SAME.

SELBORNE.

" — — — — monstrent"
" — — — — —"
" Quid tantùm Oceano properent se tingere soles"
" Hyberni; vel quæ tardis mora noctibus obstet."

GENTLEMEN who have outlets might contrive to make ornament subservient to utility; a pleasing eye-trap might also contribute to promote science: an obelisk in a garden or park might be both an embellishment and an *heliotrope.*

Any person that is curious, and enjoys the advantage of a good horizon, might, with little trouble, make two *heliotropes;* the one for the *Winter*, the other for the

Summer solstice: and these two erections might be constructed with very little expense; for two pieces of timber frame-work, about ten or twelve feet high, and four feet broad at the base, and close lined with plank, would answer the purpose.

The erection for the former should, if possible, be placed within sight of some window in the common sitting parlour; because men, at that dead season of the year, are usually within doors at the close of the day; while that for the latter might be fixed for any given spot in the garden or outlet: whence the owner might contemplate, in a fine Summer's evening, the utmost extent that the sun makes to the *northward* at the season of the longest days. Now nothing would be necessary but to place these two *objects* with so much exactness, that the *westerly* limb of the sun, at setting, might but just clear the *Winter heliotrope* to the *west* of it on the *shortest* day; and that the *whole* disc of the sun, at the *longest* day, might exactly at setting also clear the *Summer heliotrope* to the *north* of it.

By this simple expedient it would soon appear that there is no such thing, strictly speaking, as a solstice: for, from the *shortest* day, the owner would, every clear evening, see the disc *advancing*, at its setting, to the *westward* of the object; and, from the *longest* day, observe the sun *retiring* backwards every evening at its setting, towards the object *westward*, till, in a few nights, it would set quite behind it, and so by degrees to the *west* of it: for when the sun comes near the Summer solstice, the whole disc of it would at first set behind the object; after a time the *northern* limb would first appear, and so every night gradually more, till at length the whole diameter would set *northward* of it for about three nights; but on the middle night of the three, sensibly more remote than the former or following. When beginning its recess from the Summer tropic, it would continue more and more to be hidden every night, till at length it would descend quite behind the object again; and so nightly more and more to the *westward*.

LETTER XLV.

TO THE SAME.

SELBORNE

" — — — Mugire videbis
" Sub pedibus terram, et descendere montibus ornos."

WHEN I was a boy I used to read, with astonishment and implicit assent, accounts in *Baker's Chronicle* of walking hills and travelling mountains. *John Philips*, in his *Cyder*, alludes to the credit that was given to such stories with a delicate but quaint vein of humour peculiar to the author of the *Splendid Shilling*.

" I nor advise, nor reprehend the choice
" Of *Marcley Hill;* the apple no where finds
" A kinder mould: yet 'tis unsafe to trust
" Deceitful ground: who knows but that once more

"This mount may journey, and his present site
"Forsaken, to thy neighbour's bounds transfer
"Thy goodly plants, affording matter strange
"For law debates!"

But, when I came to consider better, I began to suspect that though our hills may never have journeyed far, yet that the ends of many of them have slipped and fallen away at distant periods, leaving the cliffs bare and abrupt. This seems to have been the case with *Nore* and *Whetham Hills;* and especially with the ridge between *Harteley Park* and *Ward-le-ham*, where the ground has slid into vast swellings and furrows; and lies still in such romantic confusion as cannot be accounted for from any other cause. A strange event, that happened not long since, justifies our suspicions; which, though it befell not within the limits of this parish, yet as it was within the hundred of *Selborne*, and as the circumstances were singular, may fairly claim a place in a work of this nature.

The months of *January* and *February*, in the year 1774, were remarkable for great melting snows and vast gluts of rain; so that by the end of the latter month the land-springs, or *lavants,* began to prevail, and to be near as high as in the memorable Winter of 1764. The beginning of *March* also went on in the same tenor; when, in the night between the 8th and 9th of that month, a considerable part of the great woody hanger at *Hawkley* was torn from its place, and fell down, leaving a high free-stone cliff naked and bare, and resembling the steep side of a chalk-pit. It appears that this huge fragment, being perhaps sapped and undermined by waters, foundered, and was ingulfed, going down in a perpendicular direction; for a gate which stood in the field, on the top of the hill, after sinking with its posts for thirty or forty feet, remained in so true and upright a position as to open and shut with great exactness, just as in its first situation. Several oaks also are still standing, and in a state of vegetation, after taking the same desperate leap. That great part of this prodigious mass was absorbed in some gulf below, is plain also from the inclining ground at the bottom of the hill, which is free and unincumbered; but would have been buried in heaps of rubbish, had the fragment parted and fallen forward. About an hundred yards from the foot of this hanging coppice stood a cottage by the side of a lane; and two hundred yards lower, on the other side of the lane, was a farm-house, in which lived a labourer and his family; and, just by, a stout new barn. The cottage was inhabited by an old woman and her son, and his wife. These people in the evening, which was very dark and tempestuous, observed that the brick floors of their kitchens began to heave and part; and that the walls seemed to open, and the roofs to crack: but they all agree that no tremor of the ground, indicating an earthquake, was ever felt; only that the wind continued to make a most tremendous roaring in the woods and hangers. The miserable inhabitants, not daring to go to bed, remained in the utmost solicitude and confusion, expecting every moment to be buried under the ruins of their shattered edifices. When day-light came they were at leisure to contemplate the devastations of the night: they then found that a deep rift, or chasm, had opened under their houses, and torn them, as it were, in two; and that one end of the barn had suffered in a similar manner; that a pond near the cottage had undergone a strange reverse, becoming deep at the shallow end, and so *vice versa*; that many large oaks were removed out of their perpendicular, some thrown down, and some fallen into the heads of neighbouring trees; and that a gate was thrust forward, with its hedge, full six feet, so as to require a new track to be made to it. From the foot of the cliff the general course of the ground, which is pasture, inclines in a moderate descent for half a mile, and is interspersed with some hillocks, which were rifted, in every direction, as well towards the great woody hanger, as from it. In the first pasture the deep clefts began: and running across the lane, and under the buildings, made such vast shelves that the road was impassable for some time; and so over to an arable field on the other side, which was strangely torn and disordered. The second pasture field, being more soft and springy, was protruded forward without many fissures in the turf, which was raised in long ridges resembling graves, lying at right angles to the motion. At the bottom of this enclosure the soil and turf rose many feet against the bodies of some oaks that obstructed their farther course and terminated this awful commotion.

The perpendicular height of the precipice, in general, is twenty-three yards; the length of the lapse, or slip, as seen from the fields below, one hundred and eighty-one; and a partial fall, concealed in the coppice, extends seventy yards more: so that the total length of this fragment that fell was two hundred and fifty-one yards. About fifty acres of land suffered from this violent convulsion; two houses were entirely destroyed; one end of a new barn was left in ruins, the walls being cracked through the very stones that composed them; a hanging coppice was changed to a naked rock; and some grass grounds and an arable field so broken and rifted by the chasms as to be rendered, for a time, neither fit for the plough or safe for pasturage, till considerable labour and expense had been bestowed in levelling the surface and filling in the gaping fissures.

LETTER XLVI.

TO THE SAME.

SELBORNE

"——— resonant arbusta ———"

THERE is a steep abrupt pasture field interspersed with furze close to the back of this village, well known by the name of the *Short Lithe,* consisting of a rocky dry soil, and inclining to the afternoon sun. This spot abounds with the *gryllus campestris,* or *field-cricket;* which, though frequent in these parts, is by no means a common insect in many other counties.

As their cheerful Summer cry cannot but draw the attention of a naturalist, I have often gone down to examine the œconomy of these *grylli*, and study their mode of life: but they are so shy and cautious that it is no easy matter to get a sight of them; for, feeling a person's footsteps as he advances, they stop short in the midst of their song, and retire backward nimbly into their burrows, where they lurk till all suspicion of danger is over.

At first we attempted to dig them out with a spade, but without any great success; for either we could not get to the bottom of the hole, which often terminated under a great stone; or else, in breaking up the ground, we inadvertently squeezed the poor insect to death. Out of one so bruised we took a multitude of eggs, which were long and narrow, of a yellow colour, and covered with a very tough skin. By this accident we learned to distinguish the male from the female; the former of which is shining black, with a golden stripe across his shoulders; the latter is more dusky, more capacious about the abdomen, and carries a long sword-shaped weapon at her tail, which probably is the instrument with which she deposits her eggs in crannies and safe receptacles.

Where violent methods will not avail, more gentle means will often succeed; and so it proved in the present case; for, though a spade be too boisterous and rough an implement, a pliant stalk of grass, gently insinuated into the caverns, will probe their windings to the bottom, and quickly bring out the inhabitant; and thus the humane inquirer may gratify his curiosity without injuring the object of it. It is remarkable that, though these insects are furnished with long legs behind, and brawny thighs for leaping, like grasshoppers; yet when driven from their holes they show no activity, but crawl along in a shiftless manner, so as easily to be taken: and again, though provided with a curious apparatus of wings, yet they never exert them when there seems to be the greatest occasion. The males only make that shrilling noise perhaps out of rivalry and emulation, as is the case with many animals which exert some sprightly note during their breeding time: it is raised by a brisk friction of one wing against the other. They are solitary beings, living singly male or female, each as it may happen; but there must be a time when the sexes have some intercourse, and then the wings may be useful perhaps during the hours of night. When the males meet they will fight fiercely, as I found by some which I put into the crevices of a dry stone wall, where I should have been glad to have made them settle. For though they seemed distressed by being taken out of their knowledge, yet the first that got possession of the chinks would seize on any that were obtruded upon them with a vast row of serrated fangs. With their strong jaws, toothed like the shears of a lobster's claws, they perforate and round their curious regular cells, having no fore-claws to dig, like the mole-cricket. When taken in hand I could not but wonder that they never offered to defend themselves, though armed with such formidable weapons. Of such herbs as grow before the mouths of their burrows they eat indiscriminately; and on a little platform, which they make just by, they drop their dung; and, never, in the day-time, seem to stir more than two or three inches from home. Sitting in the entrance of their caverns they chirp all night as well as day from the middle of the month of *May* to the middle of *July;* and in hot weather, when they are most vigorous, they make the hills echo; and, in the stiller hours of darkness, may be heard to a considerable distance. In the beginning of the season their notes are more faint and inward; but become louder as the Summer advances, and so die away again by degrees.

Sounds do not always give us pleasure according to their sweetness and melody; nor do harsh sounds always displease. We are more apt to be captivated or disgusted with the associations which they promote, than with the notes themselves. Thus the shrilling of the *field-cricket*, though sharp and stridulous, yet marvellously delights some hearers, filling their minds with a train of Summer ideas of every thing that is rural, verdurous, and joyous.

About the tenth of *March* the crickets appear at the mouths of their cells, which they then open and bore, and shape very elegantly. All that ever I have seen at that season were in their pupa state, and had only the rudiments of wings lying under a skin or coat, which must be cast before the insect can arrive at its perfect state;* from whence I should suppose that the old ones of last year do not always survive the Winter. In *August* their holes begin to be obliterated, and the insects are seen no more till Spring.

Not many Summers ago I endeavoured to transplant a colony to the terrace in my garden, by boring deep holes in the sloping turf. The new inhabitants stayed some time, and fed and sung; but wandered away by degrees, and were heard at a farther distance every morning; so that i appears that on this emergency they made use of their wings in attempting to return to the spot from which they were taken.

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* We have observed that they cast these skins in *April*, which are then seen lying at the mouths of their holes.

One of these crickets, when confined in a paper cage and set in the sun, and supplied with plants moistened with water, will feed and thrive, and become so merry and loud as to be irksome in the same room where a person is sitting: if the plants are not wetted it will die.

LETTER XLVII.

TO THE SAME.

DEAR SIR; SELBORNE.

"Far from all resort of mirth
"Save the cricket on the hearth."
MILTON'S *Il Penseroso.*

WHILE many other insects must be sought after in fields and woods, and waters, the *gryllus domesticus,* or *house-cricket,* resides altogether within our dwellings, intruding itself upon our notice whether we will or no. This species delights in new-built houses, being, like the spider, pleased with the moisture of the walls; and besides, the softness of the mortar enables them to burrow and mine between the joints of the bricks or stones, and to open communications from one room to another. They are particularly fond of kitchens and bakers' ovens, on account of their perpetual warmth.

Tender insects that live abroad either enjoy only the short period of one Summer, or else doze away the cold uncomfortable months in profound slumbers; but these, residing as it were in a torrid zone, are always alert and merry: a good *Christmas* fire is to them like the heats of the dog-days. Though they are frequently heard by day, yet is their natural time of motion only in the night. As soon as it grows dusk, the chirping increases, and they come running forth, and are from the size of a flea to that of their full stature. As one should suppose, from the burning atmosphere which they inhabit, they are a thirsty race, and show a great propensity for liquids, being found frequently drowned in pans of water, milk, broth, or the like. Whatever is moist they affect; and therefore often gnaw holes in wet woollen stockings and aprons that are hung to the fire: they are the housewife's barometer, foretelling her when it will rain; and are prognostic sometimes, she thinks, of ill or good luck; of the death of a near relation, or the approach of an absent lover. By being the constant companions of her solitary hours they naturally become the objects of her superstition. These crickets are not only very thirsty, but very voracious; for they will eat the scummings of pots, and yeast, salt, and crumbs of bread; and any kitchen offal or sweepings. In the Summer we have observed them to fly, when it became dusk, out of the windows, and over the neighbouring roofs. This feat of activity accounts for the sudden manner in which they often leave their haunts, as it does for the method by which they come to houses where they were not known before. It is remarkable, that many sorts of insects seem never to use their wings but when they have a mind to shift their quarters and settle new colonies. When in the air they move "*volatu undoso*," in waves or curves, like *wood-peckers*, opening and shutting their wings at every stroke, and so are always rising or sinking.

When they increase to a great degree, as they did once in the house where I am now writing, they become noisome pests, flying into the candles, and dashing into people's faces; but may be blasted and destroyed by gunpowder discharged into their crevices and crannies. In families, at such times, they are, like Pharaoh's plague of frogs,—"in their bedchambers "and upon their beds, and in their ovens, "and in their kneading-troughs."* Their shrilling noise is occasioned by a brisk attrition of their wings. Cats catch hearth-crickets, and, playing with them as they do with mice, devour them. Crickets may be destroyed, like wasps, by phials half filled with beer, or any liquid, and set in their haunts; for, being always eager to drink, they will crowd in till the bottles are full.

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[*] Exod. viii. 3.

LETTER XLVIII.

TO THE SAME.

SELBORNE.

How diversified are the modes of life not only of incongruous but even of congenerous animals; and yet their specific distinctions are not more various than their propensities. Thus, while the *field-cricket* delights in sunny dry banks, and the *house-cricket* rejoices amidst the glowing heat of the kitchen-hearth or oven, the *gryllus gryllo talpa* (the *mole-cricket*), haunts moist meadows, and frequents the sides of ponds and banks of streams, performing all its functions in a swampy wet soil. With a pair of fore-feet, curiously adapted to the purpose, it burrows and works under ground like the mole, raising a ridge as it proceeds, but seldom throwing up hillocks.

As *mole-crickets* often infest gardens by the sides of canals, they are unwelcome guests to the gardener, raising up ridges in their subterraneous progress, and rendering the walks unsightly. If they take to the kitchen quarters, they occasion great damage among the plants and roots, by destroying whole beds of cabbages, young legumes, and flowers. When dug out they seem very slow and helpless, and make no use of their wings by day; but at night they come abroad, and make long excursions, as I have been convinced by finding stragglers, in a morning, in improbable places. In fine weather, about the middle of *April*, and just at the close of day, they begin to solace themselves with a low, dull, jarring note, continued for a long time without interruption, and not unlike the chattering of the fern-owl, or goat-sucker, but more inward.

About the beginning of *May* they lay their eggs, as I was once an eye-witness: for a gardener at an house, where I was on a visit, happening to be mowing, on the

6th of that month, by the side of a canal, his scythe struck too deep, pared off a large piece of turf, and laid open to view a curious scene of domestic economy:

"————— ingentem lato dedit ore fenestram :
"Apparet domus intus, et atria longa patescunt :
"Apparent ——— penetralia."

There were many caverns and winding passages leading to a kind of chamber, neatly smoothed and rounded, and about the size of a moderate snuff-box. Within this secret nursery were deposited near an hundred eggs of a dirty yellow colour, and enveloped in a tough skin, but too lately excluded to contain any rudiments of young, being full of a viscous substance. The eggs lay but shallow, and within the influence of the sun, just under a little heap of fresh moved mould, like that which is raised by ants.

When *mole-crickets* fly they move "*cursu undoso*," rising and falling in curves, like the other species mentioned before. In different parts of this kingdom people call them *fen-crickets, churr-worms,* and *eve-churrs,* all very apposite names.

Anatomists, who have examined the intestines of these insects, astonish me with their accounts; for they say that, from the structure, position, and number of their stomachs, or maws, there seems to be good reason to suppose that this and the two former species *ruminate* or *chew* the *cud* like many quadrupeds!

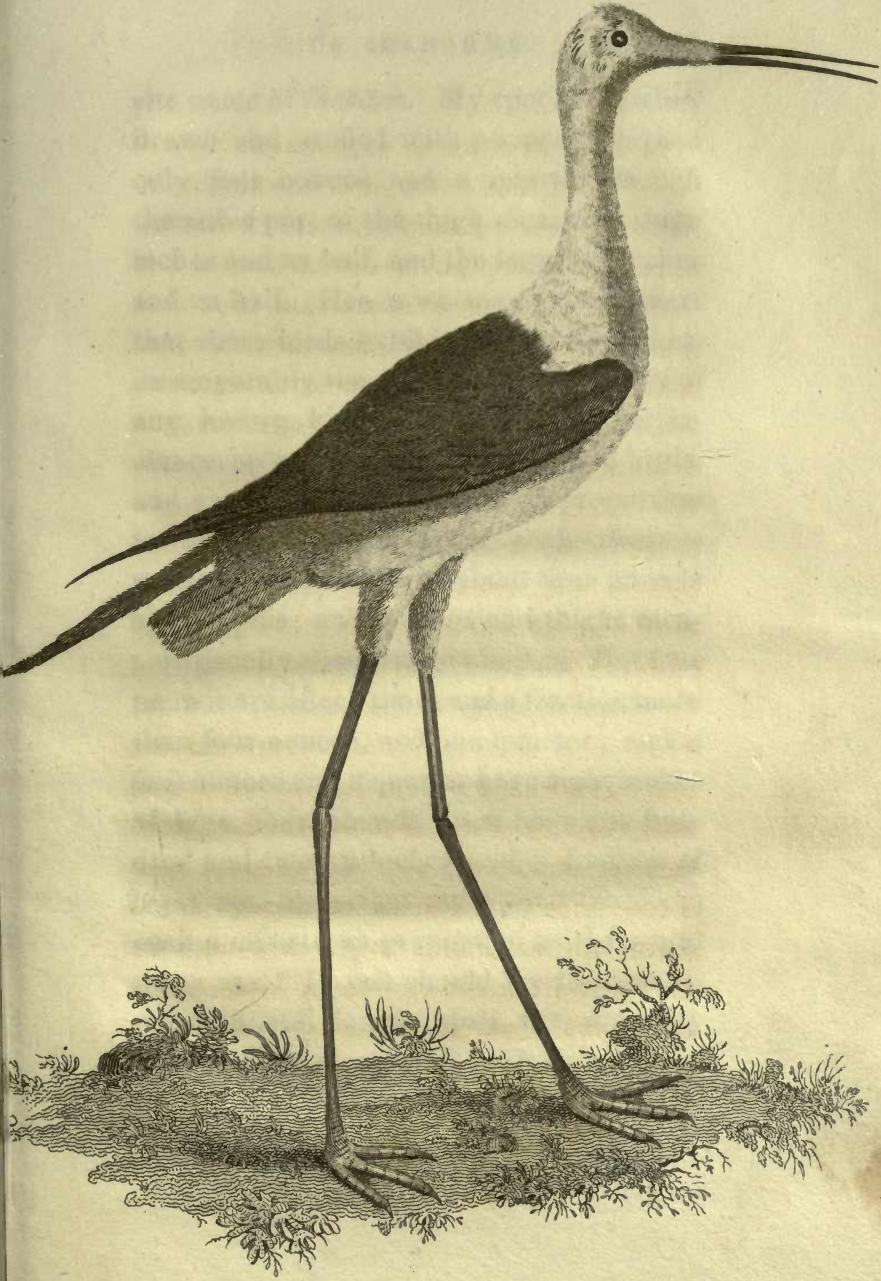
LETTER XLIX.

TO THE SAME.

SELBORNE, May 7, 1779.

It is now more than forty years that I have paid some attention to the ornithology of this district, without being able to exhaust the subject: new occurrences still arise as long as any inquiries are kept alive.

In the last week of last month five of those most rare birds, too uncommon to have obtained an *English* name, but known to naturalists by the terms of *himantopus*, or *loripes*, and *charadrius himantopus*, were shot upon the verge of *Frinsham-pond*, a large lake belonging to the bishop of *Winchester*, and lying between *Wolmer-forest*, and the town of *Farnham*, in the county of *Surrey*. The pond-keeper says there were three brace in the flock; but that, after he had satisfied his curiosity, he suffered the sixth to remain unmolested. One of these specimens I procured, and found the length of the legs to be so extraordinary, that, at first sight, one might have supposed the shanks had been fastened on to impose on the credulity of the beholder: they were legs in *caricatura;* and had we seen such proportions on a *Chinese* or *Japan* screen we should have made large allowances for the fancy of the draughtsman. These birds are of the *plover* family, and might with propriety be called the *stilt plovers*. *Brisson*, under that idea, gives them the appo-



CHARADRIUS HIMANTOPUS.

site name of *l'echasse*. My specimen, when drawn and stuffed with pepper, weighed only four ounces and a quarter, though the *naked* part of the thigh measured three inches and an half, and the legs four inches and an half. Hence we may safely assert that these birds exhibit, weight for inches, incomparably the greatest length of legs of any known bird. The *flamingo*, for instance, is one of the most long-legged birds, and yet it bears no manner of proportion to the *himantopus;* for a cock *flamingo* weighs, at an average, about four pounds avoirdupois; and his legs and thighs measure usually about twenty inches. But four pounds are fifteen times and a fraction more than four ounces, and one quarter; and if four ounces and a quarter have eight inches of legs, four pounds must have one hundred and twenty inches and a fraction of legs; *viz.* somewhat more than ten feet; such a monstrous proportion as the world never saw! If you should try the experiment in still larger birds the disparity would still increase. It must be matter of great curiosity to see the *stilt plover* move; to observe how it can wield such a length of lever with such feeble muscles as the thighs seem to be furnished with. At best one should expect it to be but a bad walker: but what adds to the wonder is, that it has no back toe. Now without that steady prop to support its steps it must be liable, in speculation, to perpetual vacillations, and seldom able to preserve the true center of gravity.

The old name of *himantopus* is taken from *Pliny;* and, by an aukward metaphor, implies that the legs are as slender and pliant as if cut out of a *thong* of leather. Neither *Willughby* nor *Ray*, in all their curious researches, either at home or abroad, ever saw this bird. Mr. *Pennant* never met with it in all *Great Britain*, but observed it often in the cabinets of the curious at *Paris*. *Hasselquist* says that it migrates to *Egypt* in the Autumn: and a most accurate observer of Nature has assured me that he has found it on the banks of the streams in *Andalusia*.

Our writers record it to have been found only twice in *Great-Britain*. From all these relations it plainly appears that these long-legged *plovers* are birds of *South Europe*, and rarely visit our island; and when they do are wanderers and stragglers, and impelled to make so distant and northern an excursion from motives or accidents for which we are not able to account. One thing may fairly be deduced, that these birds come over to us from the continent, since nobody can suppose that a species not noticed once in an age, and of such a remarkable make, can constantly breed unobserved in this kingdom.

LETTER L.

TO THE SAME.

DEAR SIR; SELBORNE, April 21, 1780.

THE old *Sussex* tortoise, that I have mentioned to you so often, is become my property. I dug it out of its Winter dormitory in *March* last, when it was enough awakened to express its resentments by hissing; and, packing it in a box with earth, carried it eighty miles in post-chaises. The rattle and hurry of the journey so perfectly roused it, that, when I turned it out on a border, it walked twice down to the bottom of my garden; however, in the evening, the weather being cold, it buried itself in the loose mould, and continues still concealed.

As it will be under my eye, I shall now have an opportunity of enlarging my observations on its mode of life, and propensities; and perceive, already that, towards the time of coming forth, it opens a breathing place in the ground near its head, requiring, I conclude, a freer respiration as it becomes more alive. This creature not only goes under the earth from the middle of *November* to the middle of *April*, but sleeps great part of the Summer; for it goes to bed in the longest days at four in the afternoon, and often does not stir in the morning till late. Besides, it retires to rest for every shower; and does not move at all in wet days.

When one reflects on the state of this strange being, it is a matter of wonder to find that Providence should bestow such a profusion of days, such a seeming waste of longevity, on a reptile that appears to relish it so little as to squander more than two thirds of its existence in a joyless stupor, and be lost to all sensation for months together in the profoundest of slumbers.

While I was writing this letter, a moist and warm afternoon, with the thermometer at 50, brought forth troops of *shell-snails;* and, at the same juncture, the *tortoise* heaved up the mould and put out its head; and the next morning came forth, as it were raised from the dead; and walked about till four in the afternoon. This was a curious coincidence! a very amusing occurrence! to see such a similarity of feelings between the two φερεοικοι! for so the *Greeks* call both the *shell-snail* and the *tortoise.*

Summer birds are, this cold and backward Spring, unusually late: I have seen but one swallow yet. This conformity with the weather convinces me more and more that they sleep in the Winter.

More particulars respecting the old family Tortoise.

Because we call this creature an abject reptile, we are too apt to undervalue his abilities, and depreciate his powers of instinct. Yet he is, as Mr. *Pope* says of his lord,

> ——— Much too wise to walk into a well:"

and has so much discernment as not to fall down an haha: but to stop and withdraw from the brink with the readiest precaution.

Though he loves warm weather he avoids the hot sun; because his thick shell, when once heated, would, as the poet says of solid armour—" scald with safety." He therefore spends the more sultry hours under the umbrella of a large cabbage leaf, or amidst the waving forests of an asparagus-bed.

But as he avoids heat in the Summer, so, in the decline of the year, he improves the faint autumnal beams, by getting within the reflection of a fruit-wall: and, though he never has read that planes inclining to the horizon receive a greater share of warmth,* he inclines his shell, by tilting it against the wall, to collect and admit every feeble ray.

Pitiable seems the condition of this poor embarrassed reptile: to be cased in a suit of ponderous armour, which he cannot lay aside; to be imprisoned, as it were, within his own shell, must preclude, we should suppose, all activity and disposition for enterprize. Yet there is a season of the year (usually the beginning of June) when his exertions are remarkable. He then walks on tiptoe, and is stirring by five in the morning; and, traversing the garden, examines every wicket and interstice in the fences, through which he will escape if possible; and often has eluded the care of the gardener, and wandered to some distant field. The motives that impel him to undertake these rambles seem to be of the amorous kind: his fancy then becomes intent on sexual attachments, which transport him beyond his usual gravity, and induce him to forget for a time his ordinary solemn deportment.

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* Several years ago a book was written entitled "Fruit-walls improved by inclining them to the horizon:" in which the author has shown, by calculation, that a much greater number of the rays of the sun will fall on such walls than on those which are perpendicular.

LETTER LI.

TO THE SAME.

SELBORNE, Sept. 3, 1781.

I HAVE now read your miscellanies through with much care and satisfaction; and am to return you my best thanks for the honourable mention made in them of me as a naturalist, which I wish I may deserve.

In some former letters I expressed my

suspicions that many of the house-martins do not depart in the Winter far from this village. I therefore determined to make some search about the south-east end of the hill, where I imagined they might slumber out the uncomfortable months of Winter. But supposing that the examination would be made to the best advantage in the Spring, and observing that no martins had appeared by the 11th of *April* last; on that day I employed some men to explore the shrubs and cavities of the suspected spot. The persons took pains, but without any success; however, a remarkable incident occurred in the midst of our pursuit—while the labourers were at work a house-martin, the first that had been seen this year, came down the village in the sight of several people, and went at once into a nest, where it stayed a short time, and then flew over the houses; for some days after no martins were observed, not till the 16th of *April*, and then only a pair. Martins in general were remarkably late this year.

LETTER LII.

TO THE SAME.

SELBORNE, Sept. 9, 1781.

I HAVE just met with a circumstance respecting swifts, which furnishes an exception to the whole tenor of my observations ever since I have bestowed any attention on that species of hirundines. Our swifts, in general, withdrew this year about the first day of *August*, all save one pair, which in two or three days was reduced to a single bird. The perseverance of this individual made me suspect that the strongest of motives, that of an attachment to her young, could alone occasion so late a stay. I watched therefore till the twenty-fourth of *August*, and then discovered that, under the eaves of the church, she attended upon two young, which were fledged, and now put out their white chins from a crevice.

These remained till the twenty-seventh, looking more alert every day, and seeming to long to be on the wing. After this day they were missing at once; nor could I ever observe them with their dam coursing round the church in the act of learning to fly, as the first broods evidently do. On the thirty-first I caused the eaves to be searched, but we found in the nest only two callow, dead, stinking swifts, on which a second nest had been formed. This double nest was full of the black shining cases of the *hippoboscæ hirundinis.*

The following remarks on this unusual incident are obvious. The first is, that though it may be disagreeable to swifts to remain beyond the beginning of *August*, yet that they can subsist longer is undeniable. The second is, that this uncommon event, as it was owing to the loss of the first brood, so it corroborates my former remark, that swifts breed regularly but once; since, was the contrary the case, the occurrence above could neither be new nor rare.

P. S. One swift was seen at *Lyndon,* in the county of *Rutland,* in 1782, so late as the third of *September.*

LETTER LIII.

TO THE SAME.

As I have sometimes known you make inquiries about several kinds of insects, I shall here send you an account of one sort which I little expected to have found in this kingdom. I had often observed that one particular part of a vine growing on the walls of my house was covered in the Autumn with a black dust-like appearance, on which the flies fed eagerly; and that the shoots and leaves thus affected did not thrive: nor did the fruit ripen. To this substance I applied my glasses; but could not discover that it had any thing to do with animal life, as I at first expected:

but, upon a closer examination behind the larger boughs, we were surprised to find that they were coated over with husky shells, from whose sides proceeded a cotton-like substance, surrounding a multitude of eggs. This curious and uncommon production put me upon recollecting what I have heard and read concerning the *coccus vitis viniferæ* of *Linnæus*, which, in the south of *Europe*, infests many vines, and is an horrid and loathsome pest. As soon as I had turned to the accounts given of this insect, I saw at once that it swarmed on my vine; and did not appear to have been at all checked by the preceding Winter, which had been uncommonly severe.

Not being then at all aware that it had any thing to do with *England*, I was much inclined to think that it came from *Gibraltar* among the many boxes and packages of plants and birds which I had formerly received from thence; and especially as the vine infested grew immediately under my study-window, where I usually kept my specimens. True it is that I had received nothing from thence for some years: but as insects, we know, are conveyed from one country to another in a very unexpected manner, and have a wonderful power of maintaining their existence till they fall into a *nidus* proper for their support and increase, I cannot but suspect still that these *cocci* came to me originally from *Andalusia*. Yet, all the while, candour obliges me to confess that Mr. *Lightfoot*, has written me word that he once, and but once, saw these insects on a vine at *Weymouth* in *Dorsetshire;* which, it is here to be observed, is a sea-port town to which the *coccus* might be conveyed by shipping.

As many of my readers may possibly never have heard of this strange and unusual insect, I shall here transcribe a passage from a natural history of *Gibraltar*, written by the Reverend *John White*, late vicar of *Blackburn* in *Lancashire*, but not yet published:—

" In the year 1770 a vine which grew
" on the east-side of my house, and which
" had produced the finest crops of grapes

" for years past, was suddenly overspread " on all the woody branches with large " lumps of a white fibrous substance resembling spiders webs, or rather raw " cotton. It was of a very clammy quality, " sticking fast to every thing that touched " it, and capable of being spun into long " threads. At first I suspected it to be the " product of spiders, but could find none. " Nothing was to be seen connected with " it but many *brown oval husky shells*, which " by no means looked like insects, but " rather resembled bits of the dry bark of " the vine. The tree had a plentiful crop " of grapes set, when this pest appeared " upon it; but the fruit was manifestly " injured by this foul incumbrance.—It " remained all the Summer, still increasing, and loaded the woody and bearing " branches to a vast degree. I often pulled " off great quantities by handfuls; but it " was so slimy and tenacious that it could " by no means be cleared. The grapes " never filled to their natural perfection, " but turned watery and vapid. Upon

" perusing the works afterwards of M. de " *Reaumur*, I found this matter perfectly " described and accounted for. Those " husky shells, which I had observed, were " no other than the *female coccus*, from " whose sides this cotton-like substance " exudes, and serves as a covering and " security for their eggs."

To this account I think proper to add, that, though the female *cocci* are stationary, and seldom remove from the place to which they stick, yet the male is a winged insect; and that the black dust which I saw was undoubtedly the excrement of the females, which is eaten by ants as well as flies. Though the utmost severity of our Winter did not destroy these insects, yet the attention of the gardener in a Summer or two has entirely relieved my vine from this filthy annoyance.

As we have remarked above that insects are often conveyed from one country to another in a very unaccountable manner, I shall here mention an emigration of small *aphides*, which was observed in the village of *Selborne* no longer ago than *August* the 1st, 1785.

At about three o'clock in the afternoon of that day, which was very hot, the people of this village were surprised by a shower of *aphides*, or *smother-flies*, which fell in these parts. Those that were walking in the street at that juncture found themselves covered with these insects, which settled also on the hedges and gardens, blackening all the vegetables where they alighted. My annuals were discoloured with them, and the stalks of a bed of onions were quite coated over for six days after. These armies were then, no doubt, in a state of emigration, and shifting their quarters; and might have come, as far as we know, from the great hop-plantations of *Kent* or *Sussex*, the wind being all that day in the easterly quarter. They were observed at the same time in great clouds about *Farnham*, and all along the vale from *Farnham* to *Alton*.*

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* For various methods by which several insects shift their quarters, see *Derham*'s Physico-Theology.

LETTER LIV.

TO THE SAME.

DEAR SIR;

WHEN I happen to visit a family where *gold* and *silver fishes* are kept in a glass bowl, I am always pleased with the occurrence, because it offers me an opportunity of observing the actions and propensities of those beings with whom we can be little acquainted in their natural state. Not long since I spent a fortnight at the house of a friend where there was such a *vivary*, to which I paid no small attention, taking every occasion to remark what passed within its narrow limits. It was here that I first observed the manner in which fishes die. As soon as the creature sickens, the head sinks lower and lower, and it stands as it were on its head; till, getting weaker, and losing all poise, the tail turns over, and at last it floats on the surface of the

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water with its belly uppermost. The reason why fishes, when dead, swim in that manner is very obvious; because, when the body is no longer balanced by the fins of the belly, the broad muscular back preponderates by its own gravity, and turns the belly uppermost, as lighter from its being a cavity, and because it contains the swimming-bladders, which contribute to render it buoyant. Some that delight in *gold* and *silver fishes* have adopted a notion that they need no aliment. True it is that they will subsist for a long time without any apparent food but what they can collect from pure water frequently changed; yet they must draw some support from animalcula, and other nourishment supplied by the water; because, though they seem to eat nothing, yet the consequences of eating often drop from them. That they are best pleased with such *jejune* diet may easily be confuted, since if you toss them crumbs they will seize them with great readiness, not to say greediness: however, bread should be given sparingly, lest, turning sour, it corrupt the water. They will also feed on the water-plant called *lemna (duck's meat)*, and also on small fry.

When they want to move a little they gently protrude themselves with their *pinnæ pectorales;* but it is with their strong muscular tails only that they and all fishes shoot along with such inconceivable rapidity. It has been said that the eyes of fishes are immoveable: but these apparently turn them forward or backward in their sockets as their occasions require. They take little notice of a lighted candle, though applied close to their heads, but flounce and seem much frightened by a sudden stroke of the hand against the support whereon the bowl is hung; especially when they have been motionless, and are perhaps asleep. As fishes have no eyelids, it is not easy to discern when they are sleeping or not, because their eyes are always open.

Nothing can be more amusing than a glass bowl containing such fishes: the double refractions of the glass and water represent them, when moving, in a shifting and changeable variety of dimensions, shades, and colours; while the two mediums, assisted by the concavo-convex shape of the vessel, magnify and distort them vastly; not to mention that the introduction of another element and its inhabitants into our parlours engages the fancy in a very agreeable manner.

Gold and *silver fishes,* though originally natives of *China* and *Japan,* yet are become so well reconciled to our climate as to thrive and multiply very fast in our ponds and stews. *Linnæus* ranks this species of fish under the genus of *syprinus,* or *carp,* and calls it *cyprinus auratus.*

Some people exhibit this sort of fish in a very fanciful way; for they cause a glass bowl to be blown with a large hollow space within, that does not communicate with it. In this cavity they put a bird occasionally; so that you may see a goldfinch or a linnet hopping as it were in the midst of the water, and the fishes swimming in a circle round it. The simple exhibition of the fishes is agreeable and pleasant; but in so complicated a way becomes whimsical and unnatural, and liable to the objection due to him,

> "Qui variare cupit rem prodigialitèr unam."

I am, &c.

LETTER LV.

TO THE SAME.

DEAR SIR; October 10, 1781.

I THINK I have observed before that much the most considerable part of the *house-martins* withdraw from hence about the first week in *October;* but that some, the latter broods I am now convinced, linger on till towards the middle of that month; and that at times, once perhaps in two or three years, a flight, for one day only, has shown itself in the first week in *November*.

Having taken notice, in *October* 1780,

that the last flight was numerous, amounting perhaps to one hundred and fifty; and that the season was soft and still; I was resolved to pay uncommon attention to these late birds; to find, if possible, where they roosted, and to determine the precise time of their retreat. The mode of life of these latter *hirundines* is very favourable to such a design: for they spend the whole day in the sheltered district, between me and the *Hanger*, sailing about in a placid, easy manner, and feasting on those insects which love to haunt a spot so secure from ruffling winds. As my principal object was to discover the place of their roosting, I took care to wait on them before they retired to rest, and was much pleased to find that, for several evenings together, just at a quarter past five in the afternoon, they all scudded away in great haste towards the south-east, and darted down among the low shrubs above the cottages at the end of the hill. This spot in many respects seems to be well calculated for their winter residence: for in many parts it is as steep as the roof of any house, and therefore secure from the annoyances of water; and it is moreover clothed with beechen shrubs, which, being stunted and bitten by sheep, make the thickest covert imaginable; and are so entangled as to be impervious to the smallest spaniel: besides, it is the nature of underwood beech never to cast its leaf all the winter; so that, with the leaves on the ground and those on the twigs, no shelter can be more complete. I watched them on to the thirteenth and fourteenth of *October*, and found their evening retreat was exact and uniform; but after this they made no regular appearance. Now and then a straggler was seen; and, on the twenty-second of *October*, I observed two in the morning over the village, and with them my remarks for the season ended.

From all these circumstances put together, it is more than probable that this lingering flight, at so late a season of the year, never departed from the island. Had they indulged me that Autumn with a *No-*

vember visit, as I much desired, I presume that, with proper assistants, I should have settled the matter past all doubt; but though the third of *November* was a sweet day, and in appearance exactly suited to my wishes, yet not a martin was to be seen; and so I was forced, reluctantly, to give up the pursuit.

I have only to add that were the bushes, which cover some acres, and are not my own property, to be grubbed and carefully examined, probably those late broods, and perhaps the whole aggregate body of the house-martins of this district, might be found there, in different secret dormitories; and that, so far from withdrawing into warmer climes, it would appear that they never depart three hundred yards from the village.

LETTER LVI.

TO THE SAME.

They who write on natural history cannot too frequently advert to *instinct,* that wonderful limited faculty, which, in some instances, raises the brute creation as it were above *reason,* and in others leaves them so far below it. Philosophers have defined *instinct* to be that secret influence by which every species is impelled naturally to pursue, at all times, the same way or track, without any teaching or example; whereas *reason,* without instruction, would often vary and do that by many methods which *instinct* effects by one alone. Now this maxim must be taken in a qualified sense; for there are instances in which *instinct* does vary and conform to the circumstances of place and convenience.

It has been remarked that every species of bird has a mode of nidification peculiar to itself; so that a school-boy would at once pronounce on the sort of nest before him. This is the case among fields and woods, and wilds; but, in the villages round *London*, where mosses and gossamer, and cotton from vegetables, are hardly to be found, the nest of the *chaffinch* has not that elegant finished appearance, nor is it so beautifully studded with lichens, as in a more rural district; and the *wren* is obliged to construct its house with straws and dry grasses, which do not give it that rotundity and compactness so remarkable in the edifices of that little architect. Again, the regular nest of the *house-martin* is hemispheric; but where a rafter, or a joist, or a cornice, may happen to stand in the way, the nest is so contrived as to conform to the obstruction, and becomes flat or oval, or compressed.

In the following instances *instinct* is perfectly uniform and consistent. There are three creatures, the *squirrel*, the *field-mouse*, and the bird called the *nut-hatch (sitta Europæa)*, which live much on hazle-nuts;

and yet they open them each in a different way. The first, after rasping off the small end, splits the shell in two with his long fore-teeth, as a man does with his knife; the second nibbles a hole with his teeth, so regular as if drilled with a wimble, and yet so small that one would wonder how the kernel can be extracted through it; while the last picks an irregular ragged hole with its bill: but as this artist has no paws to hold the nut firm while he pierces it, like an adroit workman, he fixes it, as it were in a vice, in some cleft of a tree, or in some crevice; when, standing over it, he perforates the stubborn shell. We have often placed nuts in the chink of a gate-post where *nut-hatches* have been known to haunt, and have always found that those birds have readily penetrated them. While at work they make a rapping noise that may be heard at a considerable distance.

You that understand both the theory and practical part of music may best inform us why *harmony* or *melody* should so strangely affect some men, as it were by recollection, for days after a concert is over. What I mean the following passage will most readily explain:

"Præhabebat porrò vocibus humanis, "instrumentisque harmonicis musicam illam avium: non quod aliâ quoque non "delectaretur; sed quod ex musicâ humanâ relinqueretur in animo continens "quædam, attentionemque et somnum "conturbans agitatio; dum ascensus, ex-"scensus, tenores, ac mutationes illæ sonorum, et consonantiarum euntque, red-"euntque per phantasiam:—cum nihil tale "relinqui possit ex modulationibus avium, "quæ, quod non sunt perinde a nobis "imitabiles, non possunt perinde internam "facultatem commovere."

Gassendus in Vitâ Peireskii.

This curious quotation strikes me much by so well representing my own case, and by describing what I have so often felt, but never could so well express. When I hear fine music I am haunted with passages therefrom night and day; and especially at first waking, which, by their importunity, give me more uneasiness than pleasure: elegant lessons still tease my imagination, and recur irresistibly to my recollection at seasons, and even when I am desirous of thinking of more serious matters. I am, &c.

LETTER LVII.

TO THE SAME.

A RARE, and I think a new, little bird frequents my garden, which I have great reason to think is the *pettichaps:* it is common in some parts of the kingdom; and I have received formerly several dead specimens from *Gibraltar.* This bird much resembles the *white-throat,* but has a more white or rather silvery breast and belly; is restless and active, like the *willow wrens,* and hops from bough to bough, examining every part for food; it also runs up the stems of the *crown-imperials,* and, putting its head into the bells of those flowers, sips the liquor which stands in the *nectarium* of each petal. Sometimes it feeds on the ground like the *hedge-sparrow,* by hopping about on the grass-plots and mown walks.

One of my neighbours, an intelligent and observing man, informs me that, in the beginning of *May,* and about ten minutes before eight o'clock in the evening, he discovered a great cluster of *house-swallows,* thirty at least he supposes, perching on a willow that hung over the verge of *James Knight*'s upper-pond. His attention was first drawn by the twittering of these birds, which sat motionless in a row on the bough, with their heads all one way, and, by their weight, pressing down the twig so that it nearly touched the water. In this situation he watched them till he could see no longer. Repeated accounts of this sort, Spring and fall, induce us greatly to suspect that *house-swallows* have some strong attachment to water, independent of the matter of food; and, though they may not retire into that element, yet they may conceal themselves in the banks of pools and rivers during the uncomfortable months of Winter.

One of the keepers of *Wolmer-forest* sent me a *peregrine-falcon,* which he shot on the verge of that district as it was devouring a wood-pigeon. The *falco peregrinus,* or *haggard falcon,* is a noble species of hawk seldom seen in the southern counties. In Winter 1767 one was killed in the neighbouring parish of *Faringdon,* and sent by me to Mr. *Pennant* into *North Wales.** Since that time I have met with none till now. The specimen mentioned above was in fine preservation, and not injured by the shot: it measured forty-two inches from wing to wing, and twenty-one from beak to tail, and weighed two pounds and an half standing weight. This species is very robust, and wonderfully formed for rapine: its breast was plump and muscular; its thighs long, thick, and brawny; and its legs remarkably short and well-set: the feet were armed with most formidable, sharp, long talons: the eyelids and cere of the bill were yellow; but the irides of the eyes dusky; the beak was thick and hooked, and of a dark colour, and had a jagged process near the end of the upper mandible on each side: its tail, or train, was short in proportion to the bulk of its body: yet the wings, when closed, did not extend to the end of the train. From its large and fair proportions it might be supposed to have been a female; but I was not permitted to cut open the specimen. For one of the birds of prey, which are usually lean, this was in high case: in its craw were many barley-corns, which probably came from the crop of the wood-pigeon, on which it was feeding when shot: for voracious birds do not eat grain; but, when devouring their quarry, with undistinguishing vehemence swallow bones and feathers, and all matters, indiscriminately. This falcon was probably driven from the mountains of *North Wales* or *Scotland*, where they are known to breed, by rigorous weather and deep snows that had lately fallen. I am, &c.

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* See my tenth and eleventh letter to that gentleman.

LETTER LVIII.

TO THE SAME.

My near neighbour, a young gentleman in the service of the *East-India* Company, has brought home a dog and a bitch of the *Chinese* breed from *Canton;* such as are fattened in that country for the purpose of being eaten: they are about the size of a moderate spaniel; of a pale yellow colour, with coarse bristling hairs on their backs; sharp upright ears, and peaked heads, which give them a very fox-like appearance. Their hind legs are unusually straight, without any bend at the hock or ham, to such a degree as to give them an aukward gait when they trot. When they are in motion their tails are curved high over their backs like those of some hounds, and have a bare place each on the outside from the tip midway, that does not seem to be matter of accident, but somewhat singular. Their eyes are jet-black, small, and piercing; the insides of their lips and mouths of the same colour, and their tongues blue. The bitch has a dew-claw on each hind leg; the dog has none. When taken out into a field the bitch showed some disposition for hunting, and dwelt on the scent of a covey of partridges till she sprung them, giving her tongue all the time. The dogs in *South America* are dumb; but these bark much in a short thick manner, like foxes; and have a surly, savage demeanor like their ancestors, which are not domesticated, but bred up in sties, where they are fed for the table with rice-meal and other farinaceous food. These dogs, having been taken on board as soon as weaned, could not learn much from their dam; yet they did not relish flesh when they came to *England*. In the islands of the *Pacific* ocean the dogs are bred up on vegetables, and would not eat flesh when offered them by our circumnavigators.

We believe that all dogs, in a state of nature, have sharp, upright fox-like ears; and that hanging ears, which are esteemed so graceful, are the effect of choice breeding and cultivation. Thus, in the Travels of *Ysbrandt Ides* from *Muscovy* to *China*, the dogs which draw the *Tartars* on snow-sledges near the river *Oby* are engraved with prick-ears, like those from *Canton*. The *Kamschatdales* also train the same sort of sharp-eared peaked-nosed dogs to draw their sledges; as may be seen in an elegant print engraved for Captain *Cook*'s last voyage round the world.

Now we are upon the subject of dogs, it may not be impertinent to add, that spaniels, as all sportsmen know, though they hunt partridges and pheasants as it were by instinct, and with much delight and alacrity, yet will hardly touch their bones when offered as food; nor will a mongrel dog of my own, though he is remarkable for finding that sort of game. But, when we came to offer the bones of partridges to the two *Chinese* dogs, they devoured them with much greediness, and licked the platter clean.

No sporting dogs will flush woodcocks till inured to the scent and trained to the sport, which they then pursue with vehemence and transport; but then they will not touch their bones, but turn from them with abhorrence, even when they are hungry.

Now, that dogs should not be fond of the bones of such birds as they are not disposed to hunt is no wonder; but why they reject and do not care to eat their natural game is not so easily accounted for, since the end of hunting seems to be, that the chase pursued should be eaten. Dogs again will not devour the more rancid water-fowls, nor indeed the bones of any wild-fowls; nor will they touch the fœtid bodies of birds that feed on offal and garbage: and indeed there may be somewhat of providential instinct in this circumstance of dislike; for vultures,* and kites, and ravens, and crows, &c. were intended to be messmates with dogs† over their carrion; and seem to be appointed by Nature as fellow-scavengers to remove all cadaverous nuisances from the face of the earth.

I am, &c.

LETTER LIX.

TO THE SAME.

THE fossil wood buried in the bogs of *Wolmer-forest* is not yet all exhausted; for the peat-cutters now and then stumble upon a log. I have just seen a piece which was sent by a labourer of *Oakhanger* to a car-

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[*] *Hasselquist*, in his Travels to the *Levant*, observes that the dogs and vultures at *Grand Cairo* maintain such a friendly intercourse as to bring up their young together in the same place.

[†] The *Chinese* word for a dog to an *European* ear sounds like *quihloh*.

penter of this village; this was the butend of a small oak, about five feet long, and about five inches in diameter. It had apparently been severed from the ground by an axe, was very ponderous, and as black as ebony. Upon asking the carpenter for what purpose he had procured it, he told me that it was to be sent to his brother, a joiner at *Farnham,* who was to make use of it in cabinet work, by inlaying it along with whiter woods.

Those that are much abroad on evenings after it is dark, in Spring and Summer, frequently hear a nocturnal bird passing by on the wing, and repeating often a short quick note. This bird I have remarked myself, but never could make out till lately. I am assured now that it is the *Stone-curlew (charadrius oedicnemus).* Some of them pass over or near my house almost every evening after it is dark, from the uplands of the hill and *North field,* away down towards *Dorton;* where, among the streams and meadows, they find a greater plenty of food. Birds that fly by night are obliged to be noisy; their notes often repeated become signals or watch-words to keep them together, that they may not stray or lose each the other in the dark.

The evening proceedings and manœuvres of the rooks are curious and amusing in the Autumn. Just before dusk they return in long strings from the foraging of the day, and rendezvous by thousands over *Selborne-down*, where they wheel round in the air, and sport and dive in a playful manner, all the while exerting their voices, and making a loud cawing, which, being blended and softened by the distance that we at the village are below them, becomes a confused noise or chiding; or rather a pleasing murmur, very engaging to the imagination, and not unlike the cry of a pack of hounds in hollow, echoing woods, or the rushing of the wind in tall trees, or the tumbling of the tide upon a pebbly shore. When this ceremony is over, with the last gleam of day, they retire for the night to the deep beechen woods of *Tisted* and *Ropley*. We remember a little girl who, as she was going to bed, used to remark on such an occurrence, in the true spirit of *physico-theology*, that the rooks were saying their prayers; and yet this child was much too young to be aware that the scriptures have said of the Deity—that " he feedeth the ravens who call upon him."

I am, &c.

LETTER LX.

TO THE SAME.

In reading Dr. *Huxham's Observationes de Aëre*, &c. written at *Plymouth*, I find by those curious and accurate remarks, which contain an account of the weather from the year 1727 to the year 1748, inclusive, that though there is frequent rain in that district of *Devonshire*, yet the quantity falling is not great; and that some years it has been very small: for in 1731 the rain measured only 17^{inch}.—266^{thou}. and in 1741, 20—354; and again in 1743 only 20—908.

Places near the sea have frequent scuds, that keep the atmosphere moist, yet do not reach far up into the country; making thus the maritime situations appear wet, when the rain is not considerable. In the wettest years at *Plymouth* the doctor measured only once 36; and again once, viz. 1734, 37—114: a quantity of rain that has twice been exceeded at *Selborne* in the short period of my observations. Dr. *Huxham* remarks, that frequent small rains keep the air moist; while heavy ones render it more dry, by beating down the vapours. He is also of opinion that the *dingy, smoky appearance* in the sky, in very dry seasons, arises from the want of moisture sufficient to let the light through, and render the atmosphere transparent; because he had observed several bodies more diaphanous when wet than dry; and did never recollect that the air had that look in rainy seasons.

My friend, who lives just beyond the top of the down, brought his three swivel guns to try them in my outlet, with their muzzles towards the *Hanger*, supposing that the report would have had a great effect; but the experiment did not answer his expectation. He then removed them to the *Alcove* on the *Hanger;* when the sound, rushing along the *Lythe* and *Comb-wood*, was very grand: but it was at the *Hermitage* that the echoes and repercussions delighted the hearers; not only filling the *Lythe* with the roar, as if all the beeches were tearing up by the roots; but, turning to the left, they pervaded the vale above *Combwood-ponds;* and after a pause seemed to take up the crash again, and to extend round *Harteley-hangers,* and to die away at last among the coppices and coverts of *Ward-le-ham*. It has been remarked before that this district is an *anathoth*, a place of responses or echoes, and therefore proper for such experiments: we may farther add that the pauses in echoes, when they cease and yet are taken up again, like the pauses in music, surprise the hearers, and have a fine effect on the imagination.

The gentleman above-mentioned has just fixed a barometer in his parlour at *Newton*

Valence. The tube was first filled here (at *Selborne)* twice with care, when the mercury agreed and stood exactly with my own; but, being filled again twice at *Newton,* the mercury stood, on account of the great elevation of that house, three-tenths of an inch lower than the barometers at this village, and so continues to do, be the weight of the atmosphere what it may. The plate of the barometer at *Newton* is figured as low as 27; because in stormy weather the mercury there will sometimes descend below 28. We have supposed *Newton-house* to stand two hundred feet higher than this house: but if the rule holds good, which says that mercury in a barometer sinks one-tenth of an inch for every hundred feet elevation, then the *Newton* barometer, by standing three-tenths lower than that of *Selborne,* proves that *Newton-house* must be three hundred feet higher than that in which I am writing, instead of two hundred.

It may not be impertinent to add, that the barometers at *Selborne* stand three-tenths of an inch lower than the barometers at *South Lambeth;* whence we may conclude that the former place is about three hundred feet higher than the latter; and with good reason, because the streams that rise with us run into the *Thames* at *Weybridge,* and so to *London.* Of course therefore there must be lower ground all the way from *Selborne* to *South Lambeth;* the distance between which, all the windings and indentings of the streams considered, cannot be less than an hundred miles.

I am, &c.

LETTER LXI.

TO THE SAME.

SINCE the weather of a district is undoubtedly part of its natural history, I shall make no further apology for the four following letters, which will contain many particulars concerning some of the great frosts and a few respecting some very hot Summers, that have distinguished themselves from the rest during the course of my observations.

As the frost in *January* 1768 was, for the small time it lasted, the most severe that we had then known for many years, and was remarkably injurious to ever-greens, some account of its rigour, and reason of its ravages, may be useful, and not unacceptable to persons that delight in planting and ornamenting; and may particularly become a work that professes never to lose sight of utility.

For the last two or three days of the former year there were considerable falls of snow, which lay deep and uniform on the ground without any drifting, wrapping up the more humble vegetation in perfect security. From the first day to the fifth of the new year more snow succeeded; but from that day the air became entirely clear; and the heat of the sun about noon had a considerable influence in sheltered situations.

It was in such an aspect that the snow on the author's ever-greens was melted every day, and frozen intensely every night; so that the laurustines, bays, laurels, and arbutuses looked, in three or four days, as if they had been burnt in the fire; while a neighbour's plantation of the same kind, in a high cold situation, where the snow was never melted at all, remained uninjured.

From hence I would infer that it is the repeated melting and freezing of the snow that is so fatal to vegetation, rather than the severity of the cold. Therefore it highly behoves every planter, who wishes to escape the cruel mortification of losing in a few days the labour and hopes of years, to bestir himself on such emergencies; and, if his plantations are small, to avail himself of mats, cloths, pease-haum, straw, reeds, or any such covering, for a short time; or, if his shrubberies are extensive, to see that his people go about with prongs and forks, and carefully dislodge the snow from the boughs: since the naked foliage will shift much better for itself, than where the snow is partly melted and frozen again.

It may perhaps appear at first like a paradox; but doubtless the more tender trees and shrubs should never be planted in hot aspects; not only for the reason assigned above, but also because, thus circumstanced, they are disposed to shoot earlier in the Spring, and to grow on later in the Autumn, than they would otherwise do, and so are sufferers by lagging or early frosts. For this reason also plants from *Siberia* will hardly endure our climate: because, on the very first advances of Spring, they shoot away, and so are cut off by the severe nights of *March* or *April.*

Dr. *Fothergill* and others have experienced the same inconvenience with respect to the more tender shrubs from *North-America;* which they therefore plant under north-walls. There should also perhaps be a wall to the east to defend them from the piercing blasts from that quarter.

This observation might without any impropriety be carried into animal life; for discerning bee-masters now find that their hives should not in the Winter be exposed to the hot sun, because such unseasonable warmth awakens the inhabitants too early from their slumbers; and, by putting their juices into motion too soon, subjects them afterwards to inconveniences when rigorous weather returns.

The coincidents attending this short but intense frost were, that the horses fell sick with an epidemic distemper, which injured the winds of many, and killed some; that colds and coughs were general among the human species; that it froze under people's beds for several nights; that meat was so hard frozen that it could not be spitted, and could not be secured but in cellars; that several redwings and thrushes were killed by the frost; and that the large titmouse continued to pull straws lengthwise from the eaves of thatched houses and barns in a most adroit manner, for a purpose that has been explained already.*

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* See Letter xli. to Mr. *Pennant*.

On the 3rd of *January, Benjamin Martin*'s thermometer within doors, in a close parlour where there was no fire, fell in the night to 20, and on the 4th to 18, and on the 7th to 17½, a degree of cold which the owner never since saw in the same situation; and he regrets much that he was not able at that juncture to attend his instrument abroad. All this time the wind continued north and north-east; and yet on the 8th roost-cocks, which had been silent, began to sound their clarions, and crows to clamour, as prognostic of milder weather; and, moreover, moles began to heave and work, and a manifest thaw took place. From the latter circumstance we may conclude that thaws often originate under ground from warm vapours which arise; else how should subterraneous animals receive such early intimations of their approach. Moreover, we have often observed that cold seems to descend from above; for, when a thermometer hangs abroad in a frosty night, the intervention of a cloud shall immediately raise the mercury ten degrees; and a clear sky shall again compel it to descend to its former gage.

And here it may be proper to observe, on what has been said above, that though frosts advance to their utmost severity by somewhat of a regular gradation, yet thaws do not usually come on by as regular a declension of cold; but often take place immediately from intense freezing; as men in sickness often mend at once from a paroxysm.

To the great credit of *Portugal* laurels and *American* junipers, be it remembered that they remained untouched amidst the general havock: hence men should learn to ornament chiefly with such trees as are able to withstand accidental severities, and not subject themselves to the vexation of a loss which may befall them once perhaps in ten years, yet may hardly be recovered through the whole course of their lives.

As it appeared afterwards the ilexes were much injured, the cypresses were half destroyed, the arbutuses lingered on, but never recovered; and the bays, laurustines, and laurels, were killed to the ground; and the very wild hollies, in hot aspects, were so much affected that they cast all their leaves.

By the 14th of *January* the snow was entirely gone; the turnips emerged not damaged at all, save in sunny places; the wheat looked delicately, and the garden plants were well preserved; for snow is the most kindly mantle that infant vegetation can be wrapped in: were it not for that friendly meteor no vegetable life could exist at all in northerly regions. Yet in *Sweden* the earth in *April* is not divested of snow for more than a fortnight before the face of the country is covered with flowers.

LETTER LXII.

TO THE SAME.

There were some circumstances attending the remarkable frost in *January* 1776 so singular and striking, that a short detail of them may not be unacceptable.

The most certain way to be exact will be to copy the passages from my journal, which were taken from time to time as things occurred. But it may be proper previously to remark, that the first week in *January* was uncommonly wet, and drowned with vast rains from every quarter: from whence may be inferred, as there is great reason to believe is the case, that intense frosts seldom take place till the earth is perfectly glutted and chilled with water;*

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* The Autumn preceding *January* 1768 was very wet, and particularly the month of *September*, during which there fell at *Lyndon*, in the county of *Rutland*, *six inches and an half* of rain. And the terrible long frost in 1739–40 set in after a rainy season, and when the springs were very high.

and hence dry Autumns are seldom followed by rigorous Winters.

January 7th.—Snow driving all the day, which was followed by frost, sleet, and some snow, till the 12th, when a prodigious mass overwhelmed all the works of men, drifting over the tops of the gates and filling the hollow lanes.

On the 14th the writer was obliged to be much abroad; and thinks he never before or since has encountered such rugged *Siberian* weather. Many of the narrow roads were now filled above the tops of the hedges; through which the snow was driven into most romantic and grotesque shapes, so striking to the imagination as not to be seen without wonder and pleasure. The poultry dared not to stir out of their roosting places; for cocks and hens are so dazzled and confounded by the glare of snow that they would soon perish without assistance. The hares also lay sullenly in their seats, and would not move till compelled by hunger; being conscious, poor animals, that the drifts and heaps treacherously betray their footsteps, and prove fatal to numbers of them.

From the 14th the snow continued to increase, and began to stop the road waggons and coaches, which could no longer keep on their regular stages; and especially on the western roads, where the fall appears to have been deeper than in the south. The company at *Bath*, that wanted to attend the *Queen's birth-day*, were strangely incommoded: many carriages of persons, who got in their way to town from *Bath* as far as *Marlborough*, after strange embarrassments, here met with a *ne plus ultra*. The ladies fretted, and offered large rewards to labourers if they would shovel them a track to *London:* but the relentless heaps of snow were too bulky to be removed; and so the 18th passed over, leaving the company in very uncomfortable circumstances at the *Castle* and other inns.

On the 20th the sun shone out for the first time since the frost began; a circumstance that has been remarked before much in favour of vegetation. All this time the cold was not very intense, for the thermometer stood at 29, 28, 25, and thereabout; but on the 21st it descended to 20. The birds now began to be in a very pitiable and starving condition. Tamed by the season, sky-larks settled in the streets of towns, because they saw the ground was bare; rooks frequented dunghills close to houses; and crows watched horses as they passed, and greedily devoured what dropped from them; hares now came into men's gardens, and, scraping away the snow, devoured such plants as they could find.

On the 22nd the author had occasion to go to *London* through a sort of *Laplandian-scene*, very wild and grotesque indeed. But the metropolis itself exhibited a still more singular appearance than the country; for, being bedded deep in snow, the pavement of the streets could not be touched by the wheels or the horses' feet, so that the carriages ran about without the least noise. Such an exemption from din and clatter was strange, but not pleasant; it seemed to convey an uncomfortable idea of desolation:

> " ——————— ipsa silentia terrent."

On the 27th much snow fell all day, and in the evening the frost became very intense. At *South Lambeth*, for the four following nights, the thermometer fell to 11, 7, 6, 6; and at *Selborne* to 7, 6, 10; and on the 31st of *January*, just before sun-rise, with rime on the trees and on the tube of the glass, the quicksilver sunk exactly to zero, being 32 degrees below the freezing point: but by eleven in the morning, though in the shade, it sprung up to 16½ * —a most unusual degree of cold this for the south of *England!* During these four nights the cold was so penetrating that it occasioned ice in warm chambers and under beds; and in the day the wind was so keen that persons of robust constitutions could scarcely endure to face it. The *Thames* was at once so frozen over both above and below bridge that crowds ran about on the ice. The streets were now strangely incumbered with snow, which crumbled and trod dusty; and, turning grey, resembled bay-salt: what had fallen on the roofs was so perfectly dry, that, from first to last, it lay twenty-six days on the houses in the city; a longer time than had been remembered by the oldest housekeepers living. According to all appearances we might now have expected the continuance of this rigorous weather for weeks to come, since every night increased in severity; but behold, without any apparent cause, on the 1st of *February* a thaw took place, and some rain followed before night; making good the observation above, that frosts often go off as it were at once, without any gradual declension of cold. On the 2nd of *February* the thaw persisted; and on the 3rd swarms of little insects were frisking and sporting in a court-yard at *South Lambeth*, as if they had felt no frost. Why the juices in the small bodies and smaller limbs of such minute beings are not frozen is a matter of curious inquiry.

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* At *Selborne* the cold was greater than at any other place that the author could hear of with certainty: though some reported at the time that at a village in *Kent* the thermometer fell two degrees below zero, *viz.* 34 degrees below the freezing point.

The thermometer used at *Selborne* was graduated by *Benjamin Martin.*

Severe frosts seem to be partial, or to run in currents; for, at the same juncture, as the author was informed by accurate correspondents, at *Lyndon* in the county of *Rutland*, the thermometer stood at 19: at *Blackburn*, in *Lancashire*, at 19: and at *Manchester* at 21, 20, and 18. Thus does some unknown circumstance strangely overbalance latitude, and render the cold sometimes much greater in the southern than the northern parts of this kingdom.

The consequences of this severity were, that in *Hampshire*, at the melting of the snow, the wheat looked well, and the turnips came forth little injured. The laurels and laurustines were somewhat damaged, but only in *hot aspects*. No evergreens were quite destroyed; and not half the damage sustained that befell in *January* 1768. Those laurels that were a little scorched on the south-sides were perfectly untouched on their north-sides. The care taken to shake the snow day by day from the branches seemed greatly to avail the author's evergreens. A neighbour's laurel-hedge, in a high situation, and facing to the north, was perfectly green and vigorous; and the *Portugal laurels* remained unhurt.

As to the birds, the thrushes and blackbirds were mostly destroyed; and the partridges, by the weather and poachers, were so thinned that few remained to breed the following year.

LETTER LXIII.

TO THE SAME.

As the frost in *December* 1784 was very extraordinary, you, I trust, will not be displeased to hear the particulars; and especially when I promise to say no more about the severities of Winter after I have finished this letter.

The first week in *December* was very wet, with the barometer very low. On the 7th, with the barometer at 28—five tenths, came on a vast snow, which continued all that day and the next, and most part of the following night; so that by the morning of the 9th the works of men were quite overwhelmed, the lanes filled so as to be impassable, and the ground covered twelve or fifteen inches without any drifting. In the evening of the 9th the air began to be so very sharp that we thought it would be curious to attend to the motions of a thermometer; we therefore hung out two; one made by *Martin* and one by *Dollond*, which soon began to show us what we were to expect; for, by ten o'clock, they fell to 21, and at eleven to 4, when we went to bed. On the 10th, in the morning, the quicksilver of *Dollond*'s glass was down to *half a degree below zero;* and that of *Martin*'s, which was absurdly graduated only to four degrees *above zero,* sunk quite into the brass guard of the ball; so that when the weather became most interesting this was useless. On the 10th, at eleven at night, though the air was perfectly still, *Dollond's* glass went down to *one degree below zero!* This strange severity of the weather made me very desirous to know what degree of cold there might be in such an exalted and near situation as *Newton.* We had, therefore, on the morning of the 10th, written to Mr. ——, and entreated him to hang out his thermometer, made by *Adams;* and to pay some attention to it morning and evening; expecting wonderful phænomena, in so elevated a region, at two hundred feet or more above my house. But, behold! on the 10th, at eleven at night, it was down only to 17, and the next morning at 22, when mine was at ten! We were so disturbed at this unexpected reverse of comparative local cold, that we sent one of my glasses up, thinking that of Mr. —— must, some how, be wrongly constructed. But, when the instruments came to be confronted, they went exactly together: so that, for one night at least, the cold at *Newton* was 18 degrees less than at *Selborne;* and, through the whole frost, 10 or 12 degrees; and, indeed, when we came to observe consequences, we could readily credit this; for all my laurustines, bays, ilexes, arbutuses, cypresses, and even my *Portugal laurels,** and (which occasions more regret) my fine sloping laurel-hedge, were scorched up; while, at *Newton,* the same trees have not lost a leaf!

We had steady frost on to the 25th, when the thermometer in the morning was down to 10 with us, and at *Newton* only to 21. Strong frost continued till the 31st, when some tendency to thaw was observed; and, by *January* the 3rd, 1785, the thaw was confirmed, and some rain fell.

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* Mr. *Miller,* in his Gardener's Dictionary, says positively that the *Portugal laurels* remained untouched in the remarkable frost of 1739-40. So that either that accurate observer was much mistaken, or else the frost of *December* 1784 was much more severe and destructive than that in the year above-mentioned.

A circumstance that I must not omit, because it was new to us, is, that on *Friday, December* the 10th, being bright sun-shine, the air was full of icy *spiculæ,* floating in all directions, like atoms in a sun-beam let into a dark room. We thought them at first particles of the rime falling from my tall hedges; but were soon convinced to the contrary, by making our observations in open places where no rime could reach us. Were they watery particles of the air frozen as they floated; or were they evaporations from the snow frozen as they mounted?

We were much obliged to the thermometers for the early information they gave us; and hurried our apples, pears, onions, potatoes, &c. into the cellar, and warm closets; while those who had not, or neglected such warnings, lost all their stores of roots and fruits, and had their very bread and cheese frozen.

I must not omit to tell you that, during those two *Siberian* days, my parlour-cat was so electric, that had a person stroked her, and been properly *insulated*, the shock might have been given to a whole circle of people.

I forgot to mention before, that, during the two severe days, two men, who were tracing hares in the snow, had their feet frozen; and two men, who were much better employed, had their fingers so affected by the frost, while they were thrashing in a barn, that a mortification followed, from which they did not recover for many weeks.

This frost killed all the furze and most of the ivy, and in many places stripped the hollies of all their leaves. It came at a very early time of the year, before old *November* ended; and yet may be allowed from its effects to have exceeded any since 1739—40.

LETTER LXIV.

TO THE SAME.

As the effects of heat are seldom very remarkable in the northerly climate of *England*, where the Summers are often so defective in warmth and sun-shine as not to ripen the fruits of the earth so well as might be wished, I shall be more concise in my account of the severity of a Summer season, and so make a little amends for the prolix account of the degrees of cold, and the inconveniences that we suffered from some late rigorous Winters.

The Summers of 1781 and 1783 were unusually hot and dry; to them therefore I shall turn back in my journals, without recurring to any more distant period. In the former of these years my peach and nectarine-trees suffered so much from the heat that the rind on the bodies was scalded and came off; since which the trees have been in a decaying state. This may prove a hint to assiduous gardeners to fence and shelter their wall-trees with mats or boards, as they may easily do, because such annoyance is seldom of long continuance. During that Summer also, I observed that my apples were coddled, as it were, on the trees; so that they had no quickness of flavour, and would not keep in the Winter. This circumstance put me in mind of what I have heard travellers assert, that they never ate a good apple or apricot in the south of *Europe*, where the heats were so great as to render the juices vapid and insipid.

The great pests of a garden are wasps, which destroy all the finer fruits just as they are coming into perfection. In 1781 we had none; in 1783 there were myriads; which would have devoured all the produce of my garden, had not we set the boys to take the nests, and caught thousands with hazel twigs tipped with bird-lime: we have since employed the boys to take and destroy the large breeding wasps in the

Spring. Such expedients have a great effect on these marauders, and will keep them under. Though wasps do not abound but in hot Summers, yet they do not prevail in every hot Summer, as I have instanced in the two years above-mentioned.

In the sultry season of 1783 honey-dews were so frequent as to deface and destroy the beauties of my garden. My honeysuckles, which were one week the most sweet and lovely objects that the eye could behold, became the next the most loathsome; being enveloped in a viscous substance, and loaded with black aphides, or smother-flies. The occasion of this clammy appearance seems to be this, that in hot weather the effluvia of flowers in fields and meadows and gardens are drawn up in the day by a brisk evaporation, and then in the night fall down again with the dews, in which they are entangled; that the air is strongly scented, and therefore impregnated with the particles of flowers in Summer weather, our senses will inform us; and that this clammy sweet substance is of the vegetable kind we may learn from bees, to whom it is very grateful: and we may be assured that it falls in the night, because it is always first seen in warm still mornings.

On chalky and sandy soils, and in the hot villages about *London*, the thermometer has been often observed to mount as high as 83 or 84; but with us, in this hilly and woody district, I have hardly ever seen it exceed 80; nor does it often arrive at that pitch. The reason, I conclude, is, that our dense clayey soil, so much shaded by trees, is not so easily heated through as those above-mentioned: and, besides, our mountains cause currents of air and breezes; and the vast effluvia from our woodlands temper and moderate our heats.

LETTER LXV.

TO THE SAME.

The Summer of the year 1783 was an amazing and portentous one, and full of horrible phænomena; for, besides the alarming meteors and tremendous thunder-storms that affrighted and distressed the different counties of this kingdom, the peculiar *haze,* or smokey fog, that prevailed for many weeks in this island, and in every part of *Europe,* and even beyond its limits, was a most extraordinary appearance, unlike any thing known within the memory of man. By my journal I find that I had noticed this strange occurrence from *June* 23 to *July* 20 inclusive, during which period the wind varied to every quarter without making any alteration in the air. The sun, at noon, looked as blank as a clouded moon, and shed a rust-coloured ferruginous light on the ground, and floors of rooms;

but was particularly lurid and blood-coloured at rising and setting. All the time the heat was so intense that butchers' meat could hardly be eaten on the day after it was killed; and the flies swarmed so in the lanes and hedges that they rendered the horses half frantic, and riding irksome. The country people began to look with a superstitious awe, at the red, louring aspect of the sun; and indeed there was reason for the most enlightened person to be apprehensive; for, all the while, *Calabria* and part of the isle of *Sicily*, were torn and convulsed with earthquakes; and about that juncture a *volcano* sprung out of the sea on the coast of *Norway*. On this occasion *Milton*'s noble simile of the sun, in his first book of *Paradise Lost*, frequently occurred to my mind; and it is indeed particularly applicable, because, towards the end, it alludes to a superstitious kind of dread, with which the minds of men are always impressed by such strange and unusual phænomena.

" ——— As when the *sun*, new risen,
" Looks through the horizontal *misty* air,
" *Shorn* of his *beams;* or from behind the moon,
" In *dim* eclipse, *disastrous twilight sheds*
" On half the nations, and with *fear* of *change*
" *Perplexes* monarchs.———"

LETTER LXVI.

TO THE SAME.

We are very seldom annoyed with thunder-storms; and it is no less remarkable than true, that those which arise in the south have hardly been known to reach this village; for before they get over us, they take a direction to the east or to the west, or sometimes divide into two, and go in part to one of those quarters, and in part to the other; as was truly the case in Summer 1783, when though the country round was continually harassed with tempests, and often from the south, yet we escaped them all; as appears by my journal of that Summer. The only way that I can at all account for this fact—for such it is—is, that on that quarter, between us and the sea, there are continual mountains, hill behind hill, such as *Nore-hill,* the *Barnet, Butser-hill,* and *Ports-down,* which some how divert the storms, and give them a different direction. High promontories, and elevated grounds, have always been observed to attract clouds and disarm them of their mischievous contents, which are discharged into the trees and summits as soon as they come in contact with those turbulent meteors; while the humble vales escape, because they are so far beneath them.

But, when I say I do not remember a thunder-storm from the south, I do not mean that we never have suffered from thunder-storms at all; for on *June* 5th, 1784, the thermometer in the morning being at 64, and at noon at 70, the barometer at 29—six tenths one-half, and the wind north, I observed a blue mist, smelling strongly of sulphur, hanging along our sloping woods, and seeming to indicate that thunder was at hand. I was called in about two in the afternoon, and so missed seeing the gathering of the clouds in the north, which they who were abroad assured me had something uncommon in its appearance. At about a quarter after two the storm began in the parish of *Hartley*, moving slowly from north to south; and from thence it came over *Norton-farm*, and so to *Grange-farm*, both in this parish. It began with vast drops of rain, which were soon succeeded by round hail, and then by convex pieces of ice, which measured three inches in girth. Had it been as extensive as it was violent, and of any continuance (for it was very short), it must have ravaged all the neighbourhood. In the parish of *Hartley* it did some damage to one farm; but *Norton*, which lay in the centre of the storm, was greatly injured; as was *Grange*, which lay next to it. It did but just reach to the middle of the village, where the hail broke my north windows, and all my garden-lights and hand-glasses, and many of my neighbours' windows. The extent of the storm was about two miles in length and one in breadth. We were just sitting down to dinner; but were soon diverted from our repast by the clattering of tiles and the jingling of glass. There fell at the same time prodigious torrents of rain on the farms above-mentioned, which occasioned a flood as violent as it was sudden; doing great damage to the meadows and fallows, by deluging the one and washing away the soil of the other. The hollow lane towards *Alton* was so torn and disordered as not to be passable till mended, rocks being removed that weighed 200 weight. Those that saw the effect which the great hail had on ponds and pools say that the dashing of the water made an extraordinary appearance, the froth and spray standing up in the air three feet above the surface. The rushing and roaring of the hail, as it approached, was truly tremendous.

Though the clouds at *South Lambeth*, near *London*, were at that juncture thin and light, and no storm was in sight, nor within hearing, yet the air was strongly electric; for the bells of an electric machine at that place rang repeatedly, and fierce sparks were discharged.

When I first took the present work in hand I proposed to have added an *Annus Historico-naturalis,* or the natural History of the Twelve Months of the Year; which would have comprised many incidents and occurrences that have not fallen in my way to be mentioned in my series of letters;—but, as Mr. *Aikin* of *Warrington* has lately published somewhat of this sort, and as the length of my correspondence has sufficiently put your patience to the test, I shall here take a respectful leave of you and natural history together; and am,

With all due deference and regard,

Your most obliged,

And most humble servant,

SELBORNE,
June 25, 1787.

GIL. WHITE.

A

COMPARATIVE VIEW

OF THE

NATURALIST'S CALENDAR,

AS KEPT AT

SELBORNE, IN HAMPSHIRE,

BY THE LATE

REV. GILBERT WHITE, M.A.

AND

AT CATSFIELD, NEAR BATTLE,

IN SUSSEX,

By WILLIAM MARKWICK, ESQ. F.L.S.

FROM THE YEAR 1768 TO THE YEAR 1793.

N. B. The dates in the following calendars, when more than one, express the *earliest* and the *latest* times in which the circumstance noted was observed.

A COMPARATIVE VIEW OF WHITE'S AND MARKWICK'S CALENDARS.

Of the abbreviations used, *fl.* signifies *flowering* ; *l. leafing* ; and *ap.* the first *appearance.*

	WHITE.	MARKWICK.
Redbreast (sylvia rubecula) sings	Jan. 1—12	Jan. 3—31, and again [Oct. 6
Larks (alauda arvensis) congregate	Jan. 1—18	Oct. 16. Feb. 9
Nuthatch (sitta europæa) heard	Jan. 1—14	March 3. April 10
Winter aconite (helleborus hiemalis) fl.	Jan. 1. Feb. 18	Feb. 28. April 17
Shelless snail or slug (limax) ap.	Jan. 2	Jan. 16. May 31
Grey& wagtail (motacilla boarula) ap.	Jan. 2—11	Jan. 24. March 26
White wagtail (motacilla alba) ap.		Dec. 12. Feb. 23
Missel thrush (turdus viscivorus) sings	Jan. 2—14	Feb. 19. April 14
Bearsfoot (helleborus fœtidus) fl.	Jan. 2. Feb. 14	March 1. May 5
Polyanthus (primula polyantha) fl.	Jan. 2. April 12	Jan. 1. April 9
Double daisy (bellis perennis plena) fl.	Jan. 2. Feb. 1	March 17. April 29
Mezereon (daphne mezereum) fl.	Jan. 3. Feb. 16	Jan. 2. April 4
Pansie (viola tricolor) fl.	Jan. 3	Jan. 1. May 10
Red dead-nettle (lamium purpureum) fl.	Jan. 3—21	Jan. 1. April 5

	WHITE.	MARKWICK.
Groundsel (senecio vulgaris) fl.	Jan. 3.—15	Jan. 1. April 9
Hazel (corylus avellana) fl.	Jan. 3. Feb. 28	Jan. 21. March 11
Hepatica (anemone hepatica) fl.	Jan. 4. Feb. 18	Jan. 17. April 9
Hedge sparrow (sylvia modularis) sings	Jan. 5—12	Jan. 16. March 13
Common flies (musca domestica) seen in numbers	Jan. 5. Feb. 3	May 15
Greater titmouse (parus major) sings	Jan. 6. Feb. 6	Feb. 17. March 17
Thrush (turdus musicus) sings	Jan. 6—22	Jan. 15. April 4
Insects swarm under sunny hedges	Jan. 6	
Primrose (primula vulgaris) fl.	Jan. 6. April 7	Jan. 3. March 22
Bees (apis mellifica) ap.	Jan. 6. March 19	Jan. 31. April 11; last [seen Dec. 30
Gnats play about	Jan. 6. Feb. 3	
Chaffinches, male and female, (fringilla cœlebs) seen in equal numbers	Jan. 6—11	Dec. 2. Feb. 3
Furze or gorse (ulex europæus) fl.	Jan. 8. Feb. 1.	Jan. 1. March 27
Wall-flower (cheiranthus cheiri; seu fruticulosus of Smith) fl.	Jan. 8. April 1	Feb. 21. May 9
Stock (cheiranthus incanus) fl.	Jan. 8—12	Feb. 1. June 3
Emberiza alba (bunting) in great flocks	Jan. 9	
Linnets (fringilla linota) congregate	Jan. 9	Jan. 11
Lambs begin to fall	Jan. 9—11	Jan. 6. Feb. 21.

	WHITE.	MARKWICK.
Rooks (corvus frugilegus) resort to their nest trees	Jan. 10. Feb. 11	Jan. 23
Black hellebore (helleborus niger) fl.	Jan. 10	April 27
Snow-drop (galanthus nivalis) fl.	Jan. 10. Feb. 5.	Jan. 18. March 1
White dead-nettle (lamium album) fl.	Jan. 13	March 23. May 10
Trumpet honey-suckle, fl.	Jan. 13	
Common creeping crowfoot (ranunculus repens) fl.	Jan. 13	April 10. May 12
House sparrow (fringilla domestica) chirps	Jan. 14	Feb. 17. May 9
Dandelion (leontodon taraxacum) fl.	Jan. 16. March 11	Feb. 1. April 17
Bat (vespertilio) ap.	Jan. 16. March 24	Feb. 6. June 1, last seen [Nov. 20
Spiders shoot their webs	Jan. 16	
Butterfly, ap.	Jan. 16	Feb. 21. May 8, last seen [Dec. 22
Brambling (fringilla montifringilla) ap.	Jan. 16	Jan. 10—31
Black-bird (turdus merula) whistles	Jan. 17	Feb. 15. May 13
Wren (sylvia troglodytes) sings	Jan. 17	Feb. 7. June 12
Earth-worms lie out	Jan. 18. Feb. 8	
Crocus (crocus vernus) fl.	Jan. 13. March 18	Jan. 20. March 19
Sky-lark (alauda arvensis) sings	Jan. 21	Jan. 12. Feb. 27, sings [till Nov. 13
Ivy casts its leaves	Jan. 22	

	WHITE.	MARKWICK.
Helleborus hiemalis, fl.	Jan. 22—24	Feb. 28. April 17
Common dor or clock (scarabæus stercorarius)	Jan. 23	Feb. 12. April 19, last [seen Nov. 24
Peziza acetabulum ap.	Jan. 23	
Helleborus virid fl.	Jan. 23. March 5	
Hazel (corylus avellana) fl.	Jan. 23. Feb. 1	Jan. 27. March 11
Woodlark (alauda arborea) sings	Jan. 24. Feb. 21	Jan. 28. June 5
Chaffinch (fringilla cœlebs) sings	Jan. 24. Feb. 15	Jan. 21. Feb. 26
Jack-daws begin to come to churches	Jan. 25. March 4	
Yellow wagtail (motacilla flava) ap.	Jan. 25. April 14	Ap. 13. July 3, last seen [Sept. 8
Honeysuckle (lonicera periclymenum) l.	Jan. 25	Jan. 1. April 9
Field or procumbent speedwell (veronica agrestis) fl.	Jan. 27. March 15	Feb. 12. March 29
Nettle butterfly (papilio urticæ) ap.	Jan. 27. April 2	March 5. April 24, last [seen June 6
White wagtail (motacilla alba) chirps	Jan. 28	March 16
Shell-snail (helix nemoralis) ap.	Jan. 28. Feb. 24	April 2. June 11
Earth-worms engender	Jan. 30	
Barren strawberry (fragaria sterilis) fl.	Feb. 1. March 26	Jan. 13. March 26
Blue titmouse (parus cæruleus) chirps	Feb. 1	April 27
Brown wood-owls hoot	Feb. 2	

	WHITE.	MARKWICK.
Hen (phasianus gallus) sits	Feb. 3	March 8 hatches
Marsh titmouse begins his two harsh sharp notes	Feb. 3	
Gossamer floats	Feb. 4. April 1	
Musca tenax ap.	Feb. 4. April 8	
Larustine (viburnum tinus) fl.	Feb. 5	Jan. 1. April 5
Butcher's broom (ruscus aculeatus) fl.	Feb. 5	Jan. 1. May 10
Fox (canis vulpes) smells rank	Feb. 7	May 19 young brought forth
Turkey-cocks strut and gobble	Feb. 10	
Yellow-hammer (emberiza citrinella) sings	Feb. 12	Feb. 18. April 28
Brimstone butterfly (papilio rhamni) ap.	Feb. 13. April 2	Feb. 13. March 8, last seen Dec. 24
Green woodpecker (picus viridis) makes a loud cry	Feb. 13. March 23	Jan. 1. April 17
Raven (corvus corax) builds	Feb. 14—17	April 1, has young ones
Yew-tree (taxus baccata) fl.	Feb. 14. March 27	Feb. 2. April 11 June 1
Coltsfoot (tussilago farfara) fl.	Feb. 15. March 23	Feb. 18. April 13
Rooks (corvus frugilegus) build	Feb. 16. March 6	Feb. 28. March 5
Partridges (perdix cinerea) pair	Feb. 17	Feb. 16. March 20
Peas (pisum sativum) sown	Feb. 17. March 8	Feb. 8. March 31
House pigeon (columba domestica) has young ones	Feb. 18	Feb. 8

	WHITE.	MARKWICK.
Field crickets open their holes	Feb. 20. March 30	
Common flea (pulex irritans) ap.	Feb. 21—26	
Pilewort (ficaria verna) fl.	Feb. 21. April 13	Jan. 25. March 26
Goldfinch (fringilla carduelis) sings	Feb. 21. April 5	Feb. 28. May 5
Viper (coluber berus) ap.	Feb. 22. March 26	Feb. 23. May 6, last seen [Oct. 28
Wood-louse (oniscus asellus) ap.	Feb. 23. April 1	April 27. June 17
Missel thrushes pair	Feb. 24	
Daffodil (narcissus pseudonarcissus) fl.	Feb. 24. April 7	Feb. 26. April 18
Willow (salix alba) fl.	Feb. 24. April 2	Feb. 27. April 11
Frogs (rana temporaria) croak	Feb. 25	March 9. April 20
Sweet violet (viola odorata) fl.	Feb. 26. March 31	Feb. 7. April 5
Phalæna tinea vestianella ap.	Feb. 26	
Stone curlew (otis oedicnemus) clamours	Feb. 27. April 24	June 17
Filbert (corylus sativus) fl.	Feb. 27	Jan. 25. March 26
Ring-dove cooes	Feb. 27. April 5	March 2. August 10
Apricot-tree (prunus armeniaca) fl.	Feb.	Feb. 28. April 5
Toad (rana bufo) ap.	Feb. 28. March 24	March 15. July 1
Frogs (rana temporaria) spawn	Feb. 28. March 22	Feb. 9. April 10, tad- [poles Mar. 19
Ivy-leaved speedwell (veronica hederifolia) fl.	March 1. April 2	Feb. 16. April 10

	WHITE.	MARKWICK.
Peach (amygdalus persica) fl.	March 2. April 17	March 4. April 29
Frog (rana temporaria) ap.	March 2. April 6	March 9
Shepherd's purse (thlaspi bursa pastoris) fl.	March 3	Jan. 2. April 16
Pheasant (phasianus colchicus) crows	March 3—29	March 1. May 22
Land tortoise comes forth	March 4. May 8	
Lungwort (pulmonaria officinalis) fl.	March 4. April 16	March 2. May 19
Podura fimetaria ap.	March 4	
Aranea scenica saliens ap.	March 4	
Scolopendra forficata ap.	March 5—16	
Wryneck (jynx torquilla) ap.	March 5. April 25	March 26. April 23, last [seen Sept. 14
Goose (anas anser) sits on it's eggs	March 5	March 21
Duck (anas boschas) lays	March 5	March 28
Dog's violet (viola canina) fl.	March 6. April 18	Feb. 28. April 22
Peacock butterfly (papilio io) ap.	March 6	Feb. 13. April 20. last [seen Dec. 25
Trouts begin to rise	March 7—14	
Field beans (vicia faba) planted	March 8	April 29 emerge
Blood-worms appear in the water	March 8	
Crow (corvus corone) builds	March 10	July 1 has young ones
Oats (avena sativa) sown	March 10—18	March 16. April 13
Golden crowned wren (sylvia regulus) sings	March 12. April 30	April 15. May 22, seen [Dec. 23. Jan. 26

	WHITE.	MARKWICK.
Asp (populus tremula) fl.	March 12	Feb. 26. March 28
Common elder (sambucus nigra) l.	March 13—20	Jan. 24. April 22
Laurel (prunus laurocerasus) fl.	March 15. May 21	April 2. May 27
Chrysomela Gotting. ap.	March 15	
Black ants (formica nigra) ap.	March 15. April 22	March 2. May 18
Ephemeræbisetæ ap.	March 16	
Gooseberry (ribes grossularia) l.	March 17. April 11	Feb. 26. April 9
Common stitchwort (stellaria holostea) fl.	March 17. May 19	March 8. May 7
Wood anemone (anemone nemorosa) fl.	March 17. April 22	Feb. 27, April 10
Blackbird (turdus merula) lays	March 17	April 14, young ones May 19
Raven (corvus corax) sits	March 17	April 1 builds
Wheatear (sylvia oenanthe) ap.	March 18—30	March 13. May 23, last seen Oct. 26
Musk wood crowfoot (adoxa moschatellina) fl.	March 18. April 13	Feb. 23. April 28
Willow wren (sylvia trochilus) ap.	March 19. April 13	March 30. May 16, sits May 27, last seen Oct. 23
Fumaria bulbosa fl.	March 19	
Elm (ulmus campestris) fl.	March 19. April 4	Feb. 17. April 25
Turkey (meleagris gallopavo) lays	March 19. April 7	March 18—25, sits April 4, young ones April 30
House pigeons (columba domestica) sit	March 20	March 20 young hatched
Marsh marigold (caltha palustris) fl.	March 20. April 14	March 22. May 8

	WHITE.	MARKWICK.
Buzz-fly (bombylius medius) ap.	March 21. April 28	March 15. April 30
Sand martin (hirundo riparia) ap.	March 21. April 12.	April 8. May 16, last [seen Sept. 8
Snake (coluber natrix) ap.	March 22—30	March 3. April 29, last [seen October 2
Horse ant (formica herculeana) ap.	March 22. April 18	Feb. 4. Mar. 26, last seen [Nov. 12
Greenfinch (loxia chloris) sings	March 22. April 22	March 6. April 26
Ivy (hedera helix) berries ripe	March 23. April 14	Feb. 16. May 19
Periwinkle (vinca minor) fl.	March 25	Feb. 6. May 7
Spurge laurel (daphne laureola) fl.	March 25. April 1	April 12—22
Swallow (hirundo rustica) ap.	March 26. April 20	April 7—27, last seen [Nov. 16
Black-cap (sylvia atricapilla) heard	March 26. May 4	April 14. May 18, seen April 14. May 20, last seen Sept. 19
Young ducks hatched	March 27	April 6. May 16
Golden saxifrage (chrysosplenium oppositifolium) fl.	March 27. April 9	Feb. 7. March 27
Martin (hirundo urbica) ap.	March 28. May 1	Apr. 14. May 8, last seen [Dec. 8

	WHITE.	MARKWICK.
Double hyacinth (hyacinthus orientalis) fl.	March 29. April 22	March 13. April 24
Young geese (anas anser)	March 29	March 29. April 19
Wood sorrel (oxalis acetosella) fl.	March 30. April 22	Feb. 26. April 26
Ring ouzel (turdus torquatus) seen	March 30. April 17	October 11
Barley (hordeum sativum) sown	March 31. April 30	April 12. May 20
Nightingale (sylvia luscinia) sings	April 1. May 1	April 5. July 4, last seen [Aug. 29
Ash (fraxinus excelsior) fl.	April 1. May 4	March 16. May 8
Spider's webs on the surface of the ground	April 1	
Checquered daffodil (fritillaria meleagris) fl.	April 2—24	April 15. May 1
Julus terrestris ap.	April 2	
Cowslip (primula veris) fl.	April 3—24	March 3. May 17
Ground-ivy (glecoma hederacea) fl.	April 3—15	March 2. April 16
Snipe pipes	April 3	
Box-tree (buxus sempervirens) fl.	April 3	March 27. May 8
Elm (ulmus campestris) l.	April 3	April 2. May 19
Gooseberry (ribes grossularia) fl.	April 3—14	March 21. May 1
Currant (ribes hortense) fl.	April 3—5	March 24. April 28
Pear-tree (pyrus communis) fl.	April 3. May 21	March 30. April 30
Lacerta vulgaris (newt or eft) ap.	April 4	Feb. 17. April 15, last [seen Oct. 9

	WHITE.	MARKWICK.
Dogs mercury (mercurialis perennis) fl.	April 5—19	Jan. 20. April 16
Wych elm (ulmus glabra seu montana of Smith) fl.	April 5	April 19. May 10 l.
Ladysmock (cardamine pratensis) fl.	April 6—20	Feb. 21. April 26
Cuckoo (cuculus canorus) heard	April 7—26	April 15. May 3, last [heard June 28
Black-thorn (prunus spinosa) fl.	April 7. May 10	March 16. May 8
Death-watch (termes pulsatorius) beats	April 7	March 28. May 28
Gudgeon spawns	April 7	
Red-start (sylvia phænicurus) ap.	April 8—28	April 5, sings April 25, [last seen Sept. 30
Crown imperial (fritillaria imperialis) fl.	April 8—24	April 1. May 13
Tit-lark (alauda pratensis) sings	April 9—19	April 14—29, sits June [16—27
Beech (fagus sylvatica) l.	April 10. May 8	April 24. May 25
Shell-snail (helix nemoralis) comes out in troops	April 11. May 9	May 17. June 11 ap.
Middle yellow wren ap.	April 11	
Swift (hirundo apus) ap.	April 13. May 7	April 28. May 19
Stinging-fly (conops calcitrans) ap.	April 14. May 17	
Whitlow grass (draba verna) fl.	April 14	Jan. 15. March 24

	WHITE.	MARKWICK.
Larch-tree (pinus-larix rubra) l.	April 14	April 1. May 9
Whitethroat (sylvia cinerea) ap.	April 14. May 14	April 14. May 5, sings May 3—10, last seen Sept. 23
Red ant (formica rubra) ap.	April 14	April 9. June 26
Mole cricket (gryllus gryllotalpa) churs	April 14	
Second willow or laughing wren ap.	April 14—19—23	
Red rattle (pedicularis sylvatica) fl.	April 15—19	April 10. June 4
Common flesh-fly (musca carnaria) ap.	April 15	
Lady cow (coccinella bipunctata) ap.	April 16	
Grasshopper-lark (alauda locustæ voce) ap.	April 16—30	
Willow wren its shivering note heard	April 17. May 7	April 28. May 14
Middle willow wren (regulus non cristatus medius) ap.	April 17—27	
Wild cherry (prunus cerasus) fl.	April 18. May 12	March 30. May 10
Garden cherry (prunus cerasus) fl.	April 18. May 11	March 25. May 6
Plum (prunus domestica) fl.	April 18. May 5.	March 24. May 6
Harebell (hyacinthus non-scriptus seu scilla nutans of Smith) fl.	April 19—25	March 27. May 8
Turtle (columba turtur) cooes	April 20—17	May 14. Aug. 10 seen
Hawthorn (cratægus seu mespilus oxycantha of Smith) fl.	April 20. June 11.	April 19. May 26

	WHITE.	MARKWICK.
Male fool's orchis (orchis mascula) fl.	April 21	March 29. May 13
Blue flesh fly (musca vomitoria) ap.	April 21. May 23	
Black snail or slug (limax ater) abounds	April 22	Feb. 1. Oct. 24 ap.
Apple-tree (pyrus-malus sativus) fl.	April 22. May 25	April 11. May 26
Large bat ap.	April 22. June 11	
Strawberry, wild wood (fragaria vesca sylv.) fl.	April 23—29	April 8—9
Sauce alone (erysimum alliaria) fl.	April 23	March 31. May 8
Wild or bird cherry (prunus avium) fl.	April 24	March 30. May 10
Apis hypnorum ap.	April 24	
Musca meridiana ap.	April 24. May 28	
Wolf-fly (asilus) ap.	April 25	
Cabbage butter-fly (papilio brassicæ) ap.	April 28. May 20	April 29. June 15
Dragon-fly (libellula) ap.	April 30. May 21	April 18. May 13, last [seen Nov. 10
Sycamore (acer pseudoplatanus) fl.	April 30. June 6	April 20. June 4
Bombylius minor ap.	May 1	
Glow-worm (lampyris noctiluca) shines	May 1. June 11	June 19. Sept. 28
Fern-owl or goatsucker (caprimulgus europæus) ap.	May 1—26	May 16. Sept. 14
Common bugle (ajuga reptans) fl.	May 1	March 27. May 10

	WHITE.	MARKWICK.
Field crickets (gryllus campestris) crink	May 2—24	
Chaffer or may-bug (scarabæus melolontha) ap.	May 2—26	May 2. July 7
Honeysuckle (lonicera periclymenum) fl.	May 3—30	April 24. June 21
Toothwort (lathræa squamaria) fl.	May 4—12	
Shell-snails copulate	May 4. June 17	
Sedge warbler (sylvia salicaria) sings	May 4	June 2—30
Mealy tree (viburnum lantana) fl.	May 5—17	April 25. May 22
Flycatcher(stoparolas.musiccapagrisola)ap.	May 10—30	April 29. May 21
Apis longicornis ap.	May 10. June 9	
Sedge warbler (sylvia salicaria) ap.	May 11—13	Aug. 2
Oak (quercus robur) fl.	May 13—15	April 29. June 4
Admiral butter-fly (papilio atalanta) ap.	May 13	
Orange-tip (papilio cardamines) ap.	May 14	March 30. May 19
Beech (fagus sylvatica) fl.	May 15—26	April 23. May 28
Common maple (acer campestre) fl.	May 16	April 24. May 27
Barberry-tree (berberis vulgaris) fl.	May 17—26	April 28. June 4
Wood argus butter-fly (papilio ægeria) ap.	May 17	
Orange lily (lilium bulbiferum) fl.	May 18. June 11	June 14. July 22
Burnet moth (sphinx filipendulæ) ap.	May 18. June 13	May 24. June 26
Walnut (juglans regia) l.	May 18	April 10. June 1

	WHITE.	MARKWICK.
Laburnum (cytisus laburnum) fl.	May 18. June 5	May 1. June 23
Forest-fly (hippobosca equina) ap.	May 18. June 9	
Saintfoin (hedysarum onobrychis) fl.	May 19. June 8	May 21. July 28
Peony (pæonia officinalis) fl.	May 20. June 15	April 18. May 26
Horse chesnut (æsculus hippocastanum) fl.	May 21. June 9	April 19. June 7
Lilac (syringa vulgaris) fl.	May 21	April 15. May 30
Columbine (aquilegia vulgaris) fl.	May 21—27	May 6. June 13
Medlar (mespilus germanica) fl.	May 21. June 20	April 8. June 19
Tormentil (tormentilla erecta seu officinalis of Smith) fl.	May 21	April 17. June 11
Lily of the valley (convallaria majalis) fl.	May 22	April 27. June 13
Bees (apis mellifica) swarm	May 22. July 22	May 12. June 23
Woodroof (asperula odorata) fl.	May 22—25	April 14. June 4
Wasp, female, (vespa vulgaris) ap.	May 23	April 2. June 4, last [seen Nov. 2
Mountain ash (sorbus seu pyrus aucuparia of Smith) fl.	May 23. June 8	April 20. June 8
Birds-nest orchis (ophrys nidus avis) fl.	May 24. June 11	May 18. June 12
White-beam tree (cratægus seu pyrus aria of Smith) l.	May 24. June 4	May 3
Milkwort (polygala vulgaris) fl.	May 24. June 7	April 13. June 2
Dwarf cistus (cistus helianthemum) fl.	May 25	May 4. Aug. 8

	WHITE.	MARKWICK.
Gelder rose (viburnum opulus) fl.	May 26	May 10. June 8
Common elder (sambucus nigra) fl.	May 26. June 25	May 6. June 17
Cantharis noctiluca ap.	May 26	
Apis longicornis bores holes in walks	May 27. June 9	
Mulberry-tree (morus nigra) l.	May 27. June 13	May 20. June 11
Wild service-tree (cratægus seu pyrus torminalis of Smith) fl.	May 27	May 13. June 19
Sanicle (sanicula europæa) fl.	May 27. June 13	April 23. June 4
Avens (geum urbanum) fl.	May 28	May 9. June 11
Female fool's orchis (orchis morio) fl.	May 28	April 17. May 20
Ragged Robin (lychnis flos cuculi) fl.	May 29. June 1	May 12. June 8
Burnet (poterium sanguisorba) fl.	May 29	April 30. Aug. 7
Foxglove (digitalis purpurea) fl.	May 30. June 22	May 23. June 15
Corn-flag (gladiolus communis) fl.	May 30. June 20	June 9. July 8
Serapias longifol. fl.	May 30. June 13	
Raspberry (rubus idæus) fl.	May 30. June 21	May 10. June 16
Herb Robert (geranium Robertianum) fl.	May 30	March 7. May 16
Figwort (scrophularia nodosa) fl.	May 31	May 12. June 20
Gromwell (lithospermum officinale) fl.	May 31	May 10—24
Wood spurge (euphorbia amygdaloides) fl.	June 1	March 23. May 13
Ramsons (allium ursinum) fl.	June 1	April 21. June 4

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Mouse-ear scorpion grass (myosotis scorpioides) fl.	June 1	April 11. June 1
Grasshopper (gryllus grossus) ap.	June 1—14	March 25. July 6, last [seen Nov. 3
Rose (rosa hortensis) fl.	June 1—21	June 7. July 1
Mouse-ear hawkweed (hieracium pilosella) fl.	June 1. July 16	April 19. June 12
Buckbean (menyanthes trifoliata) fl.	June 1	April 20. June 8
Rose chaffer (scarabæus auratus) ap.	June 2—8	April 18. Aug. 4
Sheep (ovis aries) shorn	June 2—23	May 23. June 17
Water-flag (iris pseudo-acorus) fl.	June 2	May 8. June 9
Cultivated rye (secale cereale) fl.	June 2	May 27
Hounds tongue (cynoglossum officinale) fl.	June 2	May 11. June 7
Helleborine (serapias latifolia) fl.	June 2. Aug. 6	July 22. Sept. 6
Green-gold fly (musca cæsar) ap.	June 2	
Argus butterfly papilio moera ap.	June 2	
Spearwort (ranunculus flammula) fl.	June 3	April 25. June 13
Birdsfoot trefoil (lotus corniculatus) fl.	June 3	April 10. June 3
Fraxinella or white dittany (dictamnus albus) fl.	June 3—11	June 9. July 24

	WHITE.	MARKWICK.
Phryganea nigra ap.	June 3	
Angler's may-fly (ephemera vulg.) ap.	June 3—14	
Ladies finger (anthyllis vulneraria) fl.	June 4	June 1. Aug. 16
Bee-orchis (ophrys apifera) fl.	June 4. July 4	
Pink (dianthus deltoides) fl.	June 5—19	May 26. July 6
Mock orange (philadelphus coronarius) fl.	June 5	May 16. June 23
Libellula virgo ap.	June 5—20	
Vine (vitis vinifera) fl.	June 7. July 30	June 18. July 29
Portugal laurel (prunus lusitanicus) fl.	June 8. July 1.	June 3. July 16
Purple spotted martagon (lilium martagon) fl.	June 8—25	June 18. July 19
Meadow cranes-bill (geranium pratense) fl.	June 8. Aug. 1	
Black bryony (tamus communis) fl.	June 8	May 15. June 21
Field pea (pisum sativum arvense) fl.	June 9	May 15. June 21
Bladder campion (cucubalus behen seu silene inflata of Smith) fl.	June 9	May 4. July 13
Bryony (bryonia alba) fl.	June 9	May 13. Aug. 17
Hedge-nettle (stachys sylvatica) fl.	June 10	May 28. June 24
Bittersweet (solanum dulcamara) fl.	June 11	May 15. June 20
Walnut (juglans regia) fl.	June 12	April 18. June 1

	WHITE.	MARKWICK.
Phallus impudicus ap.	June 12. July 23	
Rosebay willow-herb (epilobium angustifolium) fl.	June 12	June 4. July 28
Wheat (triticum hybernum) fl.	June 13. July 22	June 4—30
Comfrey (symphytum officinale) fl.	June 13	May 4. June 23
Yellow pimpernel (lysimachian emorum) fl.	June 13—30	April 10. June 12
Tremella nostoc ap.	June 15. Aug. 24	
Buckthorn (rhamnus catharticus) l.	June 16	May 25
Cuckow-spit insect (cicada spumaria) ap.	June 16	June 2—21
Dog-rose (rosa canina) fl.	June 17, 18	May 24. June 21
Puff-ball (lycoperdon bovista) ap.	June 17. Sept. 3	May 6. Aug. 19
Mullein (verbascum thapsus) fl.	June 18	June 10. July 22
Viper's bugloss (echium anglicum seu vulgare of Smith) fl.	June 19	May 27. July 3
Meadow hay cut	June 19. July 20	June 13. July 7
Stag beetle (lucanus cervus) ap.	June 19	June 14—21
Borage (borago officinalis) fl.	June 20	April 22. July 26
Spindle-tree (evonymus europæus) fl.	June 20	May 11. June 25
Musk thistle (carduus nutans) fl.	June 20. July 4	June 4. July 25
Dogwood (cornus sanguinea) fl.	June 21	May 28. June 27
Field scabious (scabiosa arvensis) fl.	June 21	June 16. Aug. 14

	WHITE.	MARKWICK.
Marsh thistle (carduus palustris) fl.	June 21—27	May 15. June 19
Dropwort (spiræa filipendula) fl.	June 22. July 9	May 8. Sept. 3
Great wild valerian (valeriana officinalis) fl.	June 22. July 7	May 22. July 21
Quail (perdix coturnix) calls	June 22. July 4	July 23, seen Sept. 1—18
Mountain willow-herb (epilobium montanum) fl.	June 22	June 5—21
Thistle upon thistle (carduus crispus) fl.	June 23—29	May 22. July 22
Cow-parsnep (heracleum sphondylium) fl.	June 23	May 27. July 12
Earth-nut (bunium bulbocastanum seu flexuosum of Smith) fl.	June 23	May 4—31
Young frogs migrate	June 23. Aug. 2	
Oestrus curvicauda ap.	June 24	
Vervain (verbena officinalis) fl.	June 24	June 10. July 17
Corn poppy (papaver rhoeas) fl.	June 24	April 30. July 15
Self-heal (prunella vulgaris) fl.	June 24	June 7—23
Agrimony (agrimonia eupatoria) fl.	June 24—29	June 7. July 9
Great horse-fly (tabanus bovinus) ap.	June 24. Aug. 2	
Greater knapweed (centaurea scabiosa) fl.	June 25	June 7. Aug. 14
Mushroom (agaricus campestris) ap.	June 26. Aug. 30	April 16. Aug. 16
Common mallow (malva sylvestris) fl.	June 26	May 27. July 13
Dwarf mallow (malva rotundifolia) fl.	June 26	May 12. July 30

	WHITE.	MARKWICK.
St. John's wort (hypericum perforatum) fl.	June 26	June 15. July 12
Broom-rape (orobanche major) fl.	June 27. July 4	May 9. July 25
Henbane (hyoscyamus niger) fl.	June 27	May 13. June 19
Goats-beard (tragopogon pratense) fl.	June 27	June 5—14
Deadly nightshade (atropa belladonna) fl.	June 27	May 22. Aug. 14
Truffles begin to be found	June 28. July 29	
Young partridges fly	June 28. July 31	July 8—28
Lime-tree (tilia europæa) fl.	June 28. July 31	June 12. July 30
Spear thistle (carduus lanceolatus) fl.	June 28. July 12	June 27. July 18
Meadow sweet (spiræa ulmaria) fl.	June 28	June 16. July 24
Greenweed (genista tinctoria) fl.	June 28	June 4. July 24
Wild thyme (thymus serpyllum) fl.	June 28	June 6. July 19
Stachys germanic. fl.	June 29. July 20	
Day-lily (hemerocallis flava) fl.	June 29. July 4	May 29. June 9
Jasmine (jasminum officinale) fl.	June 29. July 30	June 27. July 21
Holy-oak (alcea rosea) fl.	June 29. Aug. 4	July 4. Sept. 7
Monotropa hypopithys fl.	June 29. July 23	
Ladies bedstraw (galium verum) fl.	June 29	June 22. Aug. 3
Galium palustre fl.	June 29	
Nipplewort (lapsana communis) fl.	June 29	May 30. July 24
Welted thistle (carduus acanthoides) fl.	June 29	

	WHITE.	MARKWICK.
Sneezewort (achillea ptarmica) fl.	June 30	June 22. Aug. 3
Musk mallow (malva moschata) fl.	June 30	June 9. July 14
Pimpernel (anagallis arvensis) fl.	June 30	May 4. June 22
Hoary beetle (scarabæus solsit) ap.	June 30. July 17	
Corn saw-wort (serratula arvensis seu carduus arvensis of Smith) fl.	July 1	June 15. July 15
Pheasant's eye (adonis annua seu autumnalis of Smith) fl.	July 1	April 11. July 15
Red eyebright (euphrasia seu bartsia odontites of Smith) fl.	July 2	June 20. Aug. 10
Thorough wax (bupleurum rotundifol.) fl.	June 2	
Cockle (agrostemma githago) fl.	July 2	May 14. July 25
Ivy-leaved wild lettuce (prenanthes muralis) fl.	July 2	June 2. July 25
Feverfew (matricaria seu pyrethrum parthenium of Smith) fl.	July 2	June 19. July 24
Wall pepper (sedum acre) fl.	July 3	June 8. July 12
Privet (ligustrum vulgare) fl.	July 3	June 3. July 13
Common toadflax (antirrhinum linaria) fl.	July 3	June 21. Aug. 3
Perennial wild flax (linum perenne) fl.	July 4	April 21. July 6
Whortle-berries ripe (vaccinium ulig.)	July 4—24	

	WHITE.	MARKWICK.
Yellow base rocket (reseda lutea) fl.	July 5	July 19
Blue bottle (centaurea cyanus) fl.	July 5	May 15. Oct. 14
Dwarf carline thistle (carduus acaulis) fl.	July 5—12	June 30. Aug. 4
Bull-rush or cats-tail (typha latifolia) fl.	July 6	June 29. July 21
Spiked willow-herb (lythrum salicaria) fl.	July 6	June 24. Aug. 17
Black mullein (verbascum niger) fl.	July 6	
Chrysanthemum coronarium fl.	July 6	May 28. July 28
Marigolds (calendula officinalis) fl.	July 6—9	April 20. July 16
Little field madder (sherardia arvensis) fl.	July 7	Jan. 11. June 6
Calamint (melissa seu thymus calamintha of Smith) fl.	July 7	July 21
Black horehound (ballota nigra) fl.	July 7	June 16. Sept. 12
Wood betony (betonica officinalis) fl.	July 8—19	June 10. July 15
Round leaved bell-flower (campanula rotundifolia) fl.	July 8	June 12. July 29
All-good (chenopodium bonus henricus) fl.	July 8	April 21. June 15
Wild carrot (daucus carota) fl.	July 8	June 7. July 14
Indian cress (epopæolum majus) fl.	July 8—20	June 11. July 25
Cat-mint (nepeta cataria) fl.	July 9	
Cow-wheat (melampyrum sylvaticum seu pratense of Smith) fl.	July 9	May 2. June 22

	WHITE.	MARKWICK.
Crosswort (valantia cruciata seu galium cruciatum of Smith) fl.	July 9	April 10. May 28
Cranberries ripe	July 9—27	
Tufted vetch (vicia cracca) fl.	July 10	May 31. July 8
Wood vetch (vicia sylvat.) fl.	July 10	
Little throat-wort (campanula glomerata) fl.	July 11	July 28. Aug. 18
Sheep's scabious (jasione montana) fl.	July 11	June 10. July 25
Pastinaca sylv. fl.	July 12	
White lily (lilium candidum) fl.	July 12	June 21. July 22
Hemlock (conium maculatum) fl.	July 13	June 4. July 20
Caucalis anthriscus fl.	July 13	
Flying ants ap.	July 13. Aug. 11	Aug. 20. Sept. 19
Moneywort (lysimachia nummularia) fl.	July 13	June 14. Aug. 16
Scarlet martagon (lilium chalcedonicum) fl.	July 14. Aug. 4	June 21. Aug. 6
Lesser stitchwort (stellaria graminea) fl.	July 14	May 8. June 23
Fool's parsley (æthusa cynapium) fl.	July 14	June 9. Aug. 9
Dwarf elder (sambucus ebulus) fl.	July 14—29	
Swallows and martins congregate	July 14. Aug. 29	Aug. 12. Sept. 8
Potatoe (solanum tuberosum) fl.	July 14	June 3. July 12
Angelica sylv. fl.	July 15	

	WHITE.	MARKWICK.
Digitalis ferrugin. fl.	July 15—25	
Ragwort (senecio jacobæa) fl.	July 15	June 22. July 13
Golden rod (solidago virgaurea) fl.	July 15	July 7. Aug. 29
Star thistle (centaurea calcitrapa) fl.	July 16	July 16. Aug. 16
Tree primrose (oenothera biennis) fl.	July 16	June 12. July 18
Peas (pisum sativum) cut	July 17. Aug. 14	July 13. Aug. 15
Galega officin. fl.	July 17	
Apricots (prunus armeniaca) ripe	July 17. Aug. 21	July 5. Aug. 16
Clown's allheal (stachys palustris) fl.	July 17	June 12. July 14
Branching willow-herb (epilobium ramos.) fl.	July 17	
Rye harvest begins	July 17. Aug. 7	
Yellow centaury (chlora perfoliata) fl.	July 18. Aug. 15	June 15. Aug. 13
Yellow vetchling (lathyrus aphaca) fl.	July 18	
Enchanter's nightshade (circæa lutetiana) fl.	July 18	June 20. July 27
Water hemp agrimony (eupatorium cannabinum) fl.	July 18	July 4. Aug. 6
Giant throatwort (campanula trachelium) fl.	July 19	July 13. Aug. 14

	WHITE.	MARKWICK.
Eyebright (euphrasia officinalis) fl.	July 19	May 28. July 19
Hops (humulus lupulus) fl.	July 19. Aug. 10	July 20. Aug. 17
Poultry moult	July 19	
Dodder (cuscuta europæa seu epithymum of Smith) fl.	July 20	July 9. Aug. 7
Lesser centaury (gentiana seu chironia centaurium of Smith) fl.	July 20	June 3. July 19
Creeping water parsnep (sium nodiflorum) fl.	July 20	July 10. Sept. 11
Common spurrey (spergula arvensis) fl.	July 21	April 10. July 16
Wild clover (trifolium pratense) fl.	July 21	May 2. June 7
Buckwheat (polygonum fagopyrum) fl.	July 21	June 27. July 10
Wheat harvest begins	July 21. Aug. 23	July 11. Aug. 26
Great bur-reed (sparganium erectum) fl.	July 22	June 10. July 23
Marsh St. John's-wort (hypericum elodes) fl.	July 22—31	June 16. Aug. 10
Sun-dew (drosera rotundifolia) fl.	July 22	Aug. 1
March cinquefoil (comarum palustre) fl.	July 22	May 27. July 12
Wild cherries ripe	July 22	
Lancashire asphodel (anthericum ossifragum) fl.	July 22	June 21. July 29

	WHITE.	MARKWICK.
Hooded willow-herb (scutellaria galericulata) fl.	July 23	June 2. July 31
Water dropwort (oenanthe fistulos.) fl.	July 23	
Horehound (marrubium vulg.) fl.	July 23	
Seseli caruifol. fl.	July 24	
Water plantain (alisma plantago) fl.	July 24	May 31. July 21
Alopecurus myosuroides fl.	July 25	
Virgin's bower (clematis vitalba) fl.	July 25. Aug. 9	July 13. Aug. 14
Bees kill the drones	July 25	
Teasel (dipsacus sylvestris) fl.	July 26	July 16. Aug. 3
Wild marjoram (origanum vulgare) fl.	July 26	July 17. Aug. 29
Swifts (hirundo apus) begin to depart	July 27—29	Aug. 5
Small wild teasel (dipsacus pilosus) fl.	July 28, 29	
Wood sage (teucrium scorodonia) fl.	July 28	June 17. July 24
Everlasting pea (lathyrus latifolius) fl.	July 28	June 20. July 30
Trailing St. John's wort (hypericum humifusum) fl.	July 29	May 20. June 22
White hellebore (veratrum album) fl.	July 30	July 18—22
Camomile (anthemis nobilis) fl.	July 30	June 21. Aug. 20

	WHITE.	MARKWICK.
Lesser field scabious (scabiosa columbaria) fl.	July 30	July 13. Aug. 9
Sun-flower (helianthus multiflorus) fl.	July 31. Aug. 6	July 4. Aug. 22
Yellow loosestrife (lysimachia vulgaris) fl.	July 31	July 2. Aug. 7
Swift (hirundo apus) last seen	July 31. Aug. 27	Aug. 11
Oats (avena sativa) cut	Aug. 1—16	July 26. Aug. 19
Barley (hordeum sativum) cut	Aug. 1—26	July 27. Sept. 4
Lesser hooded willow-herb (scutellaria minor) fl.		
Middle fleabane (inula dysenterica) fl.	Aug. 1	Aug. 8. Sept. 7
Apis manicata ap.	Aug. 2	July 7. Aug. 3
Swallow-tailed butterfly (papilio machaon) ap.	Aug. 2	
Whame or burrel fly (oestrus bovis) lays eggs on horses	Aug. 2	April 20. June 7. last [seen Aug. 28
Sow-thistle (sonchus arvensis) fl.	Aug. 3—19	
Plantain fritillary (papilio cinxia) ap.	Aug. 3	June 17. July 21
Yellow succory (picris hieracioides) fl.	Aug. 3	
Musca mystacea ap.	Aug. 4	June 6—25
Canterbury bells (campanula medium) fl.	Aug. 5	June 5. Aug. 11

	WHITE.	MARKWICK.
Mentha longifol. fl.	Aug. 5	
Carline thistle (carlina vulgaris) fl.	Aug. 7	July 21. Aug. 18
Venetian sumach (rhus cotinus) fl.	Aug. 7	June 5. July 20
Ptinus pectinicornis ap.	Aug. 7	
Burdock (arctium lappa) fl.	Aug. 8	June 17. Aug. 4
Fell-wort (gentiana amarella) fl.	Aug. 8. Sept. 3	
Wormwood (artemisia absinthium) fl.	Aug. 8	July 22. Aug. 21
Mugwort (artemisia vulgaris) fl.	Aug. 8	July 9. Aug. 10
St. Barnaby's thistle(centaurea solstit.)fl.	Aug. 10	
Meadow saffron(colchicum autumnale)fl.	Aug. 10. Sept. 13	Aug. 15. Sept. 29
Michaelmas daisy (aster tradescanti) fl.	Aug. 12. Sept. 27	Aug. 11. Oct. 8
Meadow rue (thalictrum flavum) fl.	Aug. 14	
Sea holly (eryngium marit.) fl.	Aug. 14	
China aster (aster chinensis) fl.	Aug. 14. Sept. 28	Aug. 6. Oct. 2
Boletus albus ap.	Aug. 14	May 10
Less Venus looking glass (campanula hybrida) fl.	Aug. 15	May 14
Carthamus tinctor. fl.	Aug. 15	
Goldfinch (fringilla carduelis) young broods ap.	Aug. 15	June 15
Lapwings (tringa vanellus) congregate	Aug. 15. Sept. 12	Sept. 25. Feb. 4

	WHITE.	MARKWICK.
Black-eyed marble butterfly (papilio semele) ap.	Aug. 15	
Birds reassume their spring notes	Aug. 16	
Devil's bit (scabiosa succisa) fl.	Aug. 17	June 22. Aug. 23
Thistle down floats	Aug. 17. Sept. 10	
Ploughman's spikenard (conyza squarrosa) fl.	Aug. 18	
Autumnal dandelion (leontodon autumnale) fl.	Aug. 18	July 25
Flies abound in windows	Aug. 18	
Linnets (fringilla linota) congregate	Aug. 18. Nov. 1	Aug. 22. Nov. 8
Bulls make their shrill autumnal noise	Aug. 20	
Aster amellus fl.	Aug. 22	
Balsam (impatiens balsamina) fl.	Aug. 23	May 22. July 26
Milk thistle (carduus marianus) fl.	Aug. 24	April 21. July 18
Hop-picking begins	Aug. 24. Sept. 17	Sept. 1—15
Beech (fagus sylvatica) turns yellow	Aug. 24. Sept. 22	Sept. 5—29
Soapwort (saponaria officinalis) fl.	Aug. 25	July 19. Aug. 23
Ladies traces (ophrys spiralis) fl.	Aug. 27. Sept. 12	Aug. 18. Sept. 18
Small golden black-spotted butterfly (papilio phlæas) ap.	Aug. 29	

	WHITE.	MARKWICK.
Swallow (hirundo rustica) sings	Aug. 29	April 11. Aug. 20
Althæa frutex (hibiscus syriacus) fl.	Aug. 30. Sept. 2	July 20. Sept. 28
Great fritillary (papilio paphia) ap.	Aug. 30	
Willow red under-wing moth (phalæna pacta) ap.	Aug. 31	
Stone curlew (otis oedicnemus) clamours	Sept. 1. Nov. 7	June 17
Phalæna russula ap.	Sept. 1	
Grapes ripen	Sept. 4. Oct. 24	Aug. 31. Nov. 4
Wood owls hoot	Sept. 4. Nov. 9	
Saffron butterfly (papilio hyale) ap.	Sept. 4	Aug. 5. Sept. 26
Ring ouzel appears on its autumnal visit	Sept. 4—30	
Flycatcher (muscicapa grisola) last seen	Sept. 6—29	Sept. 4—30
Beans (vicia faba) cut	Sept. 11	Aug. 9. Oct. 14
Ivy (hedera helix) fl.	Sept. 12. Oct. 2	Sept. 18. Oct. 28
Stares congregate	Sept. 12. Nov. 1	June 4. March 21
Wild honeysuckles fl. a second time	Sept. 25	
Woodlark sings	Sept. 28. Oct. 24	
Woodcock (scolopax rusticola) returns	Sept. 29. Nov. 11	Oct. 1. Nov. 1. young ones April 28, last seen April 11
Strawberry-tree (arbutus unedo) fl.	Oct. 1	May 21. Dec. 10

	WHITE.	MARKWICK.
Wheat sown	Oct. 3. Nov. 9	Sept. 23. Oct. 19
Swallows last seen. (N. B. The house martin the latest.)	Oct. 4. Nov. 5	Nov. 16
Redwing (turdus iliacus) comes	Oct. 10. Nov. 10	Oct. 1. Dec. 18. sings Feb. 10. March 21, last seen April 13
Fieldfare (turdus pilaris) returns	Oct. 12. Nov. 23	Oct. 13. Nov. 18, last seen May 1
Gossamer fills the air	Oct. 15—27	
Chinese holy-oak (alcea rosea) fl.	Oct. 19	July 7. Aug. 21
Hen chaffinches congregate	Oct. 20. Dec. 31	
Wood pigeons come	Oct. 23. Dec. 27	
Royston crow (corvus cornix) returns	Oct. 23. Nov. 29	Oct. 13. Nov. 17, last [seen April 15
Snipe (scolopax gallinago) returns	Oct. 25. Nov. 20	Sept. 29. Nov. 11, last [seen April 14
Tortoise begins to bury himself	Oct. 27. Nov. 26	
Rooks (corvus frugilegus) return to their nest trees	Oct. 31. Dec. 25	June 29. Oct. 20
Bucks grunt	Nov. 1	
Primrose (primula vulgaris) fl.	Nov. 10	Oct. 7. Dec. 30
Green whistling plover ap.	Nov. 13, 14	
Helvella mitra ap.	Nov. 16	

	WHITE.	MARKWICK.
Greenfinches flock	Nov. 27	
Hepatica fl.	Nov. 30. Dec. 29	Feb. 19
Furze (ulex europæus) fl.	Dec. 4—21	Dec. 16—31
Polyanthus (primula polyanthus) fl.	Dec. 7—16	Dec. 31
Young lambs dropped	Dec. 11—27	Dec. 12. Feb. 21
Moles work in throwing up hillocks	Dec. 12—23	
Helleborus fœtidus fl.	Dec. 14—30	
Daisy (bellis perennis) fl.	Dec. 15	Dec. 26—31
Wall-flower (cheiranthus cheiri seu fruticulosus of Smith) fl.	Dec. 15	Nov. 5
Mezereon fl.	Dec. 15	
Snowdrop fl.	Dec. 29	

IN SESE VERTITUR ANNUS.

OBSERVATIONS

ON

VARIOUS PARTS OF NATURE.

FROM MR. WHITE'S MSS.

WITH REMARKS BY MR. MARKWICK.

OBSERVATIONS ON BIRDS.

BIRDS IN GENERAL.

In severe weather, fieldfares, red-wings, sky-larks, and tit-larks, resort to watered meadows for food; the latter wades up to its belly in pursuit of the pupæ of insects, and runs along upon the floating grass and weeds. Many gnats are on the snow near the water, these support the birds in part.

Birds are much influenced in their choice of food by colour, for though white currants are a much sweeter fruit than red, yet they seldom touch the former till they have devoured every bunch of the latter.

+ Red-starts, fly-catchers, and black-caps, arrive early in April. If these little delicate beings are birds of passage (as we have

hite, in the observations on birds recorded on
t, must have meant insectivorous ones,

reason to suppose they are, because they are never seen in Winter) how could they, feeble as they seem, bear up against such storms of snow and rain, and make their way through such meteorous turbulences, as one should suppose would embarrass and retard the most hardy and resolute of the winged nation? Yet they keep their appointed times and seasons; and in spite of frosts and winds return to their stations periodically, as if they had met with nothing to obstruct them. The withdrawing and appearance of the short-winged Summer birds is a very puzzling circumstance in natural history!

When the boys bring me wasps' nests, my bantom fowls fare deliciously, and when the combs are pulled to pieces, devour the young wasps in their maggot state with the highest glee and delight. Any insect-eating bird would do the same; and therefore I have often wondered that the accurate Mr. Ray should call one species of buzzard *buteo apivorus sive vespivorus,* or the *honey buzzard,* because some combs of wasps happened to be found in one of their nests. The combs were conveyed thither doubtless for the sake of the maggots or nymphs, and not for their honey: since none is to be found in the combs of wasps. Birds of prey occasionally feed on insects; thus have I seen a tame kite picking up the female ants full of eggs with much satisfaction. WHITE.

That red-starts, fly-catchers, black-caps, and other slender-billed insectivorous small birds, particularly the swallow tribe, make their first appearance very early in the Spring, is a well known fact; though the fly-catcher is the latest of them all in its visit (as this accurate naturalist observes in another place), for it is never seen before the month of May. If these delicate creatures come to us from a distant country, they will probably be exposed in their passage, as Mr. White justly remarks, to much greater difficulties from storms and tempests than their feeble powers appear to be able to surmount: on the other hand, if we suppose them to pass the Winter in a dormant state in this country concealed in caverns or other hiding places sufficiently guarded from the extreme cold of our Winter to preserve their life, and that at the approach of Spring they revive from their torpid state and reassume their usual powers of action, it will entirely remove the first difficulty, arising from the storms and tempests they are liable to meet with in their passage; but how are we to get over the still greater difficulty of their revivification from their torpid state? What degree of warmth in the temperature of the air is necessary to produce that effect, and how it operates on the functions of animal life, are questions not easily answered.

How could Mr. White suppose that Ray named this species the honey buzzard because it fed on honey, when he not only named it in Latin *buteo apivorus et vespivorus*, but expressly says that "it feeds on insects, and brings up its young with the maggots or nymphs of wasps?"

That birds of prey, when in want of their proper food, flesh, sometimes feed on insects I have little doubt, and think I have observed the common buzzard, falco buteo, to settle on the ground and pick up insects of some kind or other. MARKWICK.

ROOKS.

Rooks are continually fighting and pulling each other's nests to pieces: these proceedings are inconsistent with living in such close community. And yet if a pair offer to build on a single tree, the nest is plundered and demolished at once. Some rooks roost on their nest trees. The twigs which the rooks drop in building supply the poor with brushwood to light their fires. Some unhappy pairs are not permitted to finish any nest till the rest have completed their building. As soon as they get a few sticks together, a party comes and demolishes the whole. As soon as rooks have finished their nests, and before they lay, the cocks begin to feed the hens, who receive their bounty with a fondling tremulous voice and fluttering wings, and all the little blandishments that are expressed by the young, while in a helpless state. This gallant deportment of the males is continued through the whole season of incubation. These birds do not copulate on trees, nor in their nests, but on the ground in the open fields. WHITE.

After the first brood of rooks are sufficiently fledged, they all leave their nest-trees in the day-time, and resort to some distant place in search of food, but return regularly every evening, in vast flights, to their nest-trees, where, after flying round several times with much noise and clamour, till they are all assembled together, they take up their abode for the night.

MARKWICK.

THRUSHES.

Thrushes during long droughts are of great service in hunting out shell snails, which they pull in pieces for their young, and are thereby very serviceable in gardens. Missel thrushes do not destroy the fruit in gardens like the other species of turdi, but feed on the berries, of misseltoe, and in the Spring on ivy berries, which then begin to ripen. In the Summer, when their young become fledged, they leave neighbourhoods, and retire to sheep-walks and wild commons.

The magpies, when they have young, destroy the broods of missel thrushes, though the dams are fierce birds, and fight boldly in defence of their nests. It is probably to avoid such insults, that this species of thrush, though wild at other times, delights to build near houses, and in frequented walks and gardens. WHITE.

Of the truth of this I have been an eye-witness, having seen the common thrush feeding on the shell snail.

In the very early part of this Spring (1797) a bird of this species used to sit every morning on the top of some high elms close by my windows, and delight me with its charming song, attracted thither, probably, by some ripe ivy berries that grew near the place.

I have remarked something like the latter fact, for I remember, many years ago, seeing a pair of these birds fly up repeatedly and attack some larger bird, which I suppose disturbed their nest in my orchard, uttering at the same time violent shrieks. Since writing the above, I have seen more than once a pair of these birds attack some magpies that had disturbed their nest, with great violence and loud shrieks. MARKWICK.

POULTRY.

Many creatures are endowed with a ready discernment to see what will turn to their own advantage and emolument; and often discover more sagacity than could be expected. Thus my neighbour's poultry watch for waggons loaded with wheat, and running after them pick up a number of grains which are shaken from the sheaves by the agitation of the carriages. Thus, when my brother used to take down his gun to shoot sparrows, his cats would run out before him, to be ready to catch up the birds as they fell.

The earnest and early propensity of the gallinæ to roost on high is very observable; and discovers a strong dread impressed on their spirits respecting vermin that may annoy them on the ground during the hours of darkness. Hence poultry, if left to themselves and not housed, will perch the Winter through on yew-trees and fir-trees; and turkies and guinea fowls, heavy as they are, get up into apple trees: pheasants also in woods sleep on trees to avoid foxes; while pea-fowls climb to the tops of the highest trees round their owner's house for security, let the weather be ever so cold or blowing. Partridges, it is true, roost on the ground, not having the faculty of perching; but then the same fear prevails in their minds; for through apprehensions from pole-cats and stoats, they never trust themselves to coverts, but nestle together in the midst of large fields, far removed from hedges and coppices, which they love to haunt in the day, and where at that season they can sculk more secure from the ravages of rapacious birds.

As to ducks and geese, their awkward splay web-feet forbid them to settle on trees; they therefore, in the hours of darkness and danger, betake themselves to their own element the water, where, amidst large lakes and pools, like ships riding at anchor, they float the whole night long in peace and security.

WHITE.

Guinea fowls not only roost on high, but in hard weather resort, even in the daytime, to the very tops of the highest trees.

Last Winter, when the ground was covered with snow, I discovered all my guinea fowls, in the middle of the day, sitting on the highest boughs of some very tall elms, chattering and making a great clamour: I ordered them to be driven down, lest they should be frozen to death in so elevated a situation, but this was not effected without much difficulty, they being very unwilling to quit their lofty abode, notwithstanding one of them had its feet so much frozen that we were obliged to kill it. I know not how to account for this, unless it was occasioned by their aversion to the snow on the ground, they being birds that come originally from a hot climate.

Notwithstanding the awkward splay web-feet (as Mr. White calls them) of the duck genus, some of the foreign species have the power of settling on the boughs of trees apparently with great ease; an instance of which I have seen in the earl of Ashburnham's menagerie, where the summer duck, anas sponsa, flew up and settled on the branch of an oak-tree in my presence; but whether any of them roost on trees in the night, we are not informed by any author that I am acquainted with. I suppose not, but that, like the rest of the genus, they sleep on the water, where the birds of this genus are not always perfectly secure, as will appear from the following circumstance which happened in this neighbourhood a few years since, as I was credibly informed. A female fox was found in the morning drowned in the same pond in which were several geese, and it was supposed that in the night the fox swam into the pond to devour the geese, but was attacked by the gander, which being most powerful in its own element, buffeted the fox with its wings about the head till it was drowned. MARKWICK.

HEN PARTRIDGE.

A hen partridge came out of a ditch, and ran along shivering with her wings, and crying out as if wounded and unable to get from us. While the dam acted this distress, the boy who attended me saw her brood, that was small and unable to fly, run for shelter into an old fox-earth under the bank. So wonderful a power is instinct. WHITE.

It is not uncommon to see an old partridge feign itself wounded and run along on the ground fluttering and crying before either dog or man, to draw them away from its helpless unfledged young ones. I have seen it often, and once in particular I saw a remarkable instance of the old bird's solicitude to save its brood. As I was hunting with a young pointer, the dog ran on a brood of very small partridges; the old bird cried, fluttered, and ran tumbling along just before the dog's nose till she had drawn him to a considerable distance, when she took wing and flew still farther off, but not out of the field: on this the dog returned to me, near which place the young ones lay concealed in the grass, which the old bird no sooner perceived than she flew back again to us, settled just before the dog's nose again, and by rolling and tumbling about drew off his attention from her young, and thus preserved her brood a second time. I have also seen, when a kite has been hovering over a covey of young partridges, the old birds fly up at the bird of prey, screaming and fighting with all their might to preserve their brood.

MARKWICK.

A HYBRID PHEASANT.

Lord Stawell sent me from the great lodge in the Holt a curious bird for my inspection. It was found by the spaniels of one of his keepers in a coppice, and shot on the wing. The shape, air, and habit of the bird, and the scarlet ring round the eyes, agreed well with the appearance of a cock pheasant: but then the head and neck, and breast and belly were of a glossy black: and though it weighed three pounds three ounces and a half,* the weight of a large full-grown cock pheasant, yet there were no signs of any spurs on the legs, as is usual with all grown cock pheasants, who have long ones. The legs and feet were naked of feathers, and therefore it could be nothing of the grous kind. In the tail were no long bending feathers, such as cock pheasants usually have, and are characteristic of the sex. The tail was much shorter than the tail of a hen pheasant, and blunt and square at the end. The back, wing feathers, and tail, were all of a pale russet curiously streaked, somewhat like the upper parts of a hen partridge. I returned it with my verdict, that it was probably a spurious or hybrid hen bird, bred between a cock pheasant and some domestic fowl. When I came to talk with the keeper who brought it, he told me that some pea-hens had been known last Summer to haunt the coppices and coverts where this mule was found.

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* Hen pheasants usually weigh only two pounds ten ounces.

Mr. Elmer, of Farnham, the famous game painter, was employed to take an exact copy of this curious bird.

N. B. It ought to be mentioned, that some good judges have imagined this bird to have been a stray grous or black cock; it is, however, to be observed, that Mr. W. remarks, that its legs and feet were naked, whereas those of the grous are feathered to the toes. WHITE.

Mr. Latham observes, that "pea-hens, after they have done laying, sometimes assume the plumage of the male bird," and has given a figure of the male-feathered pea-hen now to be seen in the Leverian Museum; and M. Salerne remarks, that "the hen pheasant, when she has done laying and sitting, will get the plumage of the male." May not this hybrid pheasant (as Mr. White calls it) be a bird of this kind? that is, an old hen pheasant which had just begun to assume the plumage of the cock. **MARKWICK.**

LAND-RAIL.

A man brought me a land-rail or daker-hen, a bird so rare in this district that we seldom see more than one or two in a season, and those only in Autumn. This is deemed a bird of passage by all the writers: yet from its formation seems to be poorly qualified for migration; for its wings are short, and placed so forward, and out of the centre of gravity, that it flies in a very heavy and embarrassed manner, with its legs hanging down; and can hardly be sprung a second time, as it runs very fast, and seems to depend more on the swiftness of its feet than on its flying.

When we came to draw it, we found the entrails so soft and tender, that in appearance they might have been dressed like the ropes of a woodcock. The craw or crop was small and lank, containing a mucus; the gizzard thick and strong, and filled with small shell snails, some whole, and many ground to pieces through the attrition which is occasioned by the muscular force and motion of that intestine. We saw no gravels among the food: perhaps the shell snails might perform the functions of gravels or pebbles, and might grind one another. Land-rails used to abound formerly, I remember, in the low wet bean fields of Christian Malford in North Wilts, and in the meadows near Paradise Gardens at Oxford, where I have often heard them cry crex, crex. The bird mentioned above weighed 7½ oz. was fat and tender, and in flavour like the flesh of a woodcock. The liver was very large and delicate. WHITE.

Land-rails are more plentiful with us than in the neighbourhood of Selborne. I have found four brace in an afternoon, and a friend of mine lately shot nine in two adjoining fields; but I never saw them in any other season than the Autumn.

That it is a bird of passage there can be little doubt, though Mr. White thinks it poorly qualified for migration, on account of the wings being short and not placed in the exact centre of gravity: how that may be I cannot say, but I know that its heavy sluggish flight is not owing to its inability of flying faster, for I have seen it fly very swiftly, although in general its actions are sluggish. Its unwillingness to rise proceeds, I imagine, from its sluggish disposition, and its great timidity, for it will sometimes squat so close to the ground as to suffer itself to be taken up by the hand, rather than rise; and yet it will at times run very fast.

What Mr. White remarks respecting the small shell snails found in its gizzard, confirms my opinion, that it frequents corn-fields, seed clover, and brakes or fern, more for the sake of snails, slugs, and other insects which abound in such places, than for the grain or seeds; and that it is entirely an insectivorous bird.

MARKWICK.

FOOD OF THE RING-DOVE.

One of my neighbours shot a ring-dove on an evening as it was returning from feed and going to roost. When his wife had picked and drawn it, she found its craw stuffed with the most nice and tender tops of turnips. These she washed and boiled, and so sat down to a choice and delicate plate of greens, culled and provided in this extraordinary manner.

Hence we may see that graminivorous birds, when grain fails, can subsist on the leaves of vegetables. There is reason to suppose that they would not long be healthy without; for turkies, though corn-fed, delight in a variety of plants, such as cabbage, lettuce, endive, &c. and poultry pick much grass; while geese live for months together on commons by grazing alone.

" Nought is useless made ;———
" ——— On the barren heath
" The shepherd tends his flock that daily crop
" Their verdant dinner from the mossy turf
" Sufficient : after them the cackling *goose*,
" Close-grazer, finds wherewith to ease her want."
PHILIPS'S CYDER.

WHITE.

That many graminivorous birds feed also on the herbage or leaves of plants, there can be no doubt: partridges and larks frequently feed on the green leaves of turnips, which gives a peculiar flavour to their flesh, that is, to me, very palatable: the flavour also of wild ducks and geese greatly depends on the nature of their food; and their flesh frequently contracts a rank unpleasant taste, from their having lately fed on strong marshy aquatic plants, as I suppose.

That the leaves of vegetables are wholesome and conducive to the health of birds, seems probable, for many people fat their ducks and turkies with the leaves of lettuce chopped small. MARKWICK.

HEN HARRIER.

A neighbouring gentleman sprung a pheasant in a wheat stubble, and shot at it; when, notwithstanding the report of the gun, it was immediately pursued by the blue hawk, known by the name of the hen-harrier, but escaped into some covert. He then sprung a second, and a third, in the same field, that got away in the same manner; the hawk hovering round him all the while that he was beating the field, conscious no doubt of the game that lurked in the stubble. Hence we may conclude that this bird of prey was rendered very daring and bold by hunger, and that hawks cannot always seize their game when they please. We may farther observe, that they cannot pounce their quarry on the ground, where it might be able to make a stout resistance, since so large a fowl as a pheasant could not but be visible to the piercing eye of a hawk, when hovering over the field. Hence that propensity of cowring and squatting till they are almost trod on, which no doubt was intended as a mode of security: though long rendered destructive to the whole race of gallinæ by the invention of nets and guns.

WHITE.

Of the great boldness and rapacity of birds of prey, when urged on by hunger, I have seen several instances; particularly, when shooting in the Winter in company with two friends, a woodcock flew across us closely pursued by a small hawk; we all three fired at the woodcock instead of the hawk, which, notwithstanding the report of three guns close by it, continued its pursuit of the woodcock, struck it down, and carried it off, as we afterwards discovered.

At another time, when partridge-shooting with a friend, we saw a ring-tail hawk rise out of a pit with some large bird in its claws; though at a great distance, we both fired and obliged it to drop its prey, which proved to be one of the partridges which we were in pursuit of; and lastly, in an evening, I shot at and plainly saw that I had wounded a partridge, but it being late was obliged to go home without finding it again. The next morning I walked round my land without any gun, but a favourite old spaniel followed my heels. When I came near the field where I wounded the bird the evening before, I heard the partridges call, and seemed to be much disturbed. On my approaching the bar-way they all rose, some on my right and some on my left hand; and just before and over my head, I perceived (though indistinctly, from the extreme velocity of their motion) two birds fly directly against each other, when instantly, to my great astonishment, down dropped a partridge at my feet: the dog immediately seized it, and on examination I found the blood flow very fast from a fresh wound in the head, but there was some dry clotted blood on its wings and side; whence I concluded that a hawk had singled out my wounded bird as the object of his prey, and had struck it down the instant that my approach had obliged the birds to rise on the wing; but the space between the hedges was so small, and the motion of the birds so instantaneous and quick, that I could not distinctly observe the operation. MARKWICK.

GREAT SPECKLED DIVER, OR LOON.

As one of my neighbours was traversing Wolmer forest from Bramshot across the moors, he found a large uncommon bird fluttering in the heath, but not wounded, which he brought home alive. On examination it proved to be *colymbus glacialis Linn.* the great speckled diver or loon, which is most excellently described in Willughby's Ornithology.

Every part and proportion of this bird is so incomparably adapted to its mode of life, that in no instance do we see the wisdom of God in the creation to more advantage. The head is sharp and smaller than the part of the neck adjoining, in order that it may pierce the water; the wings are placed forward and out of the centre of gravity, for a purpose which shall be noticed hereafter; the thighs quite at the podex, in order to facilitate diving; and the legs are flat, and as sharp backwards almost as the edge of a knife, that in striking they may easily cut the water: while the feet are palmated, and broad for swimming, yet so folded up when advanced forward to take a fresh stroke, as to be full as narrow as the shank. The two exterior toes of the feet are longest; the nails flat and broad, resembling the human, which give strength and increase the power of swimming. The foot, when expanded, is not at right angles to the leg or body of the bird: but the exterior part inclining towards the head forms an acute angle with the body; the intention being, not to give motion in the line of the legs themselves, but by the combined impulse of both in an intermediate line, the line of the body.

Most people know, that have observed at all, that the swimming of birds is nothing more than a walking in the water, where one foot succeeds the other as on the land; yet no one, as far as I am aware, has remarked that diving fowls, while under water, impel and row themselves forward by a motion of their wings, as well as by the impulse of their feet: but such is really the case, as any person may easily be convinced, who will observe ducks when hunted by dogs in a clear pond. Nor do I know that any one has given a reason why the wings of diving fowls are placed so forward: doubtless, not for the purpose of promoting their speed in flying, since that position certainly impedes it; but probably for the increase of their motion under water, by the use of four oars instead of two; yet were the wings and feet nearer together, as in land-birds, they would, when in action, rather hinder than assist one another.

This colymbus was of considerable bulk, weighing only three drachms short of three pounds avoirdupois. It measured in length from the bill to the tail (which was very short) two feet, and to the extremities of the toes four inches more; and the breadth of the wings expanded was 42 inches. A person attempted to eat the body, but found it very strong and rancid, as is the flesh of all birds living on fish. Divers or loons, though bred in the most northerly parts of Europe, yet are seen with us in very severe Winters; and on the Thames are called sprat loons, because they prey much on that sort of fish.

The legs of the *colymbi* and *mergi* are placed so very backward, and so out of all centre of gravity, that these birds cannot walk at all. They are called by Linnæus *compedes,* because they move on the ground as if shackled or fettered. WHITE.

These accurate and ingenious observations, tending to set forth in a proper light the wonderful works of God in the creation, and to point out his wisdom in adapting the singular form and position of the limbs of this bird to the particular mode in which it is destined to pass the greatest part of its life in an element much denser than the air, do Mr. White credit, not only as a naturalist, but as a man and as a philosopher, in the truest sense of the word, in my opinion; for were we enabled to trace the works of nature minutely and accurately, we should find, not only that every bird, but every creature, was equally well adapted to the purpose for which it was intended; though this fitness and propriety of form is more striking in such animals as are destined to any uncommon mode of life.

I have had in my possession two birds, which, though of a different genus, bear a great resemblance to Mr. White's Colymbus, in their manner of life, which is spent chiefly in the water, where they swim and dive with astonishing rapidity, for which purpose their fin-toed feet, placed far behind, and very short wings, are particularly well adapted, and show the wisdom of God in the creation as conspicuously as the bird before-mentioned. These birds were the greater and lesser crested grebe, *podiceps cristatus et auritus.* What surprised me most was, that the first of these birds was found alive on dry ground, about seven miles from the sea, to which place there was no communication by water. How did it get so far from the sea? its wings and legs being so ill adapted either to flying or walking. The lesser crested grebe was also found in a fresh-water pond which had no communication with other water, at some miles distance from the sea. MARKWICK.

STONE CURLEW.

On the 27th of February 1788, Stone Curlews were heard to pipe; and on March 1st, after it was dark, some were passing over the village, as might be perceived by their quick short note, which they use in their nocturnal excursions by way of watch-word, that they may not stray and lose their companions.

Thus, we see, that retire whithersoever they may in the Winter, they return again early in the Spring, and are, as it now appears, the first Summer birds that come back. Perhaps the mildness of the season may have quickened the emigration of the curlews this year.

They spend the day in high elevated fields and sheep-walks; but seem to descend in the night to streams and meadows, perhaps for water, which their upland haunts do not afford them. WHITE.

On the 31st of January 1792 I received a bird of this species which had been recently killed by a neighbouring farmer, who said that he had frequently seen it in his fields during the former part of the Winter; this perhaps was an occasional straggler, which, by some accident, was prevented from accompanying its companions in their migration. MARKWICK.

THE SMALLEST UNCRESTED WILLOW WREN.

The smallest uncrested willow wren, or chiff chaf, is the next early Summer bird which we have remarked; it utters two sharp piercing notes, so loud in hollow woods, as to occasion an echo, and is usually first heard about the 20th of March. WHITE.

This bird, which Mr. White calls the smallest willow wren or chiff chaf, makes its appearance very early in the Spring, and is very common with us; but I cannot make out the three different species of willow wrens which he assures us he has discovered. Ever since the publication of his History of Selborne I have used my utmost endeavours to discover his three birds, but hitherto without success. I have frequently shot the bird which "haunts only the tops of trees and makes a sibilous noise," even in the very act of uttering that sibilous note, but it always proved to be the common willow wren or his chiff chaf. In short, I never could discover more than one species, unless my greater pettychaps, *sylvia hortensis* of Latham, is his greatest willow wren. MARKWICK.

FERN OWL, OR GOAT SUCKER.

The country people have a notion that the fern-owl, or churn-owl, or eve-jarr, which they also call a puckeridge, is very injurious to weanling calves, by inflicting, as it strikes at them, the fatal distemper known to cow-leeches by the name of puckeridge. Thus does this harmless ill-fated bird fall under a double imputation which it by no means deserves—in Italy, of sucking the teats of goats, whence it is called *caprimulgus;* and with us, of communicating a deadly disorder to cattle. But the truth of the matter is, the malady above-mentioned is occasioned by the *œstrus bovis,* a dipterous insect, which lays its eggs along the chines of kine, where the maggots, when hatched, eat their way through the hide of the beast into the flesh, and grow to a very large size. I have just talked with a man, who says, he has more than once stripped calves who have died of the puckeridge; that the ail or complaint lay along the chine, where the flesh was much swelled, and filled with purulent matter. Once I myself saw a large rough maggot of this sort squeezed out of the back of a cow.

These maggots in Essex are called wornils.

The least observation and attention would convince men, that these birds neither injure the goatherd nor the grazier, but are perfectly harmless, and subsist alone, being night birds, on night insects, such as *scarabæi,* and *phalænæ;* and through the month of July mostly on the *scarabæus solstitialis,* which in many districts abounds at that season. Those that we have opened, have always had their craws stuffed with large night moths and their eggs, and pieces of chaffers: nor does it any-wise appear how they can, weak and unarmed as they seem, inflict any harm upon kine, unless they possess the powers of animal magnetism, and can affect them by fluttering over them.

A fern-owl, this evening (August 27) showed off in a very unusual and entertaining manner, by hawking 'round and round the circumference of my great spreading oak for twenty times following, keeping mostly close to the grass, but occasionally glancing up amidst the boughs of the tree. This amusing bird was then in pursuit of a brood of some particular phalæna belonging to the oak, of which there are several sorts; and exhibited on the occasion a command of wing superior, I think, to that of the swallow itself.

When a person approaches the haunt of fern-owls in an evening, they continue flying round the head of the obtruder; and by striking their wings together above their backs, in the manner that the pigeons called smiters are known to do, make a smart snap; perhaps at that time they are jealous for their young; and their noise and gesture are intended by way of menace.

Fern-owls have attachment to oaks, no doubt on account of food; for the next evening we saw one again several times among the boughs of the same tree; but it did not skim round its stem over the grass, as on the evening before. In May these birds find the *scarabæus melolontha* on the oak; and the *scarabæus solstitialis* at midsummer. These peculiar birds can only be watched and observed for two hours in the twenty-four: and then in a dubious twilight an hour after sun-set and an hour before sun-rise.

On this day (July 14, 1789) a woman brought me two eggs of a fern-owl, or eve-jarr, which she found on the verge of the Hanger, to the left of the hermitage under a beechen shrub. This person, who lives just at the foot of the Hanger, seems well acquainted with these nocturnal swallows, and says she has often found their eggs near that place, and that they lay only two at a time on the bare ground. The eggs were oblong, dusky, and streaked somewhat in the manner of the plumage of the parent bird, and were equal in size at each end. The dam was sitting on the eggs when found, which contained the rudiments of young, and would have been hatched perhaps in a week. From hence we may see the time of their breeding, which corresponds pretty well with that of the swift, as does also the period of their arrival. Each species is usually seen about the beginning of May. Each breeds but once in a Summer; each lays only two eggs.

July 4, 1790. The woman who brought me two fern-owls' eggs last year on July 14, on this day produced me two more, one of which had been laid this morning, as appears plainly, because there was only one in the nest the evening before. They were found, as last July, on the verge of the down above the hermitage under a beechen shrub, on the naked ground. Last year those eggs were full of young, and just ready to be hatched.

These circumstances point out the exact time when these curious nocturnal migratory birds lay their eggs and hatch their young. Fern-owls, like snipes, stone curlews, and some other birds, make no nest. Birds that build on the ground do not make much of nests. WHITE.

No author that I am acquainted with has given so accurate and pleasing an account of the manners and habits of the goat-sucker as Mr. White, taken entirely from his own observations. Its being a nocturnal bird, has prevented my having many opportunities of observing it. I suspect that it passes the day in concealment amidst the dark and shady gloom of deep-wooded dells, or as they are called here gills; having more than once seen it roused from such solitary places by my dogs, when shooting in the day-time. I have also sometimes seen it in an evening, but not long enough to take notice of its habits and manners. I have never seen it but in the Summer, between the months of May and September. MARKWICK.

SAND MARTINS.

March 23, 1788. A gentleman, who was this week on a visit at Waverley, took the opportunity of examining some of the holes in the sand banks with which that district abounds. As these are undoubtedly bored by bank martins, and are the places where they avowedly breed, he was in hopes they might have slept there also, and that he might have surprised them just as they were awaking from their Winter slumbers. When he had dug for some time, he found the holes were horizontal and serpentine, as I had observed before; and that the nests were deposited at the inner end, and had been occupied by broods in former Summers, but no torpid birds were to be found. He opened and examined about a dozen holes. Another gentleman made the same search many years ago, with as little success.

These holes were in depth about two feet.

March 21, 1790. A single bank or sand martin was seen hovering and playing round the sand pit at Short Heath, where in the Summer they abound.

April 9, 1793. A sober hind assures us, that this day, on Wish-hanger common, between Hedleigh and Frinsham, he saw several bank-martins playing in and out, and hanging before some nest holes in a sand-hill, where these birds usually nestle.

This incident confirms my suspicions

that this species of hirundo is to be seen first of any; and gives great reason to suppose that they do not leave their wild haunts at all, but are secreted amidst the clefts and caverns of those abrupt cliffs where they usually spend their Summers.

The late severe weather considered, it is not very probable that these birds should have migrated so early from a tropical region, through all these cutting winds and pinching frosts: but it is easy to suppose that they may, like bats and flies, have been awakened by the influence of the sun, amidst their secret latebræ, where they have spent the uncomfortable foodless months in a torpid state, and the profoundest of slumbers.

There is a large pond at Wish-hanger, which induces these sand-martins to frequent that district. For I have ever remarked that they haunt near great waters, either rivers or lakes. WHITE.

Here, and in many other passages of his writings, this very ingenious Naturalist favours the opinion that part at least of the swallow tribe pass their Winter in a torpid state in the same manner as bats and flies, and revive again on the approach of Spring.

I have frequently taken notice of all these circumstances, which induced Mr. White to suppose that some of the hirundines lie torpid during Winter. I have seen, so late as November, on a finer day than usual at that season of the year, two or three swallows flying backwards and forwards under a warm hedge, or on the sunny side of some old building; nay I once saw on the 8th of December two martins flying about very briskly, the weather being mild. I had not seen any considerable number either of swallows or martins for a considerable time before; from whence then could these few birds come, if not from some hole or cavern where they had laid themselves up for the Winter? Surely it will not be asserted that these birds migrate back again from some distant tropical region, merely on the appearance of a fine day or two at this late season of the year. Again, very early in the Spring, and sometimes immediately after very cold severe weather, on its growing a little warmer, a few of these birds suddenly make their appearance, long before the generality of them are seen. These appearances certainly favour the opinion of their passing the Winter in a torpid state, but do not absolutely prove the fact; for who ever saw them reviving of their own accord from their torpid state, without being first brought to the fire, and as it were, forced into life again; soon after which revivification they constantly die.

MARKWICK.

SWALLOWS, CONGREGATING, AND DISAPPEARANCE OF.

During the severe winds that often prevail late in the Spring, it is not easy to say how the hirundines subsist: for they withdraw themselves, and are hardly ever seen, nor do any insects appear for their support. That they can retire to rest and sleep away these uncomfortable periods as bats do, is a matter rather to be suspected than proved: or do they not rather spend their time in deep and sheltered vales near waters, where insects are more likely to be found? Certain it is, that hardly any individuals of this genus have at such times been seen for several days together.

September 13, 1791. The congregating flocks of hirundines on the church and tower are very beautiful and amusing! When they fly off together from the roof, on any alarm, they quite swarm in the air. But they soon settle in heaps, and preening their feathers, and lifting up their wings to admit the sun, seem highly to enjoy the warm situation. Thus they spend the heat of the day, preparing for their emigration, and, as it were, consulting when and where they are to go. The flight about the church seems to consist chiefly of house martins, about 400 in number: but there are other places of rendezvous about the village frequented at the same time.

It is remarkable, that though most of them sit on the battlements and roof, yet many hang or cling for some time by their claws against the surface of the walls, in a manner not practised by them at any other time of their remaining with us.

The swallows seem to delight more in holding their assemblies on trees.

November 3, 1789. Two swallows were seen this morning at Newton vicarage-house, hovering and settling on the roofs and out-buildings. None have been observed at Selborne since October 11. It is very remarkable, that after the hirundines have disappeared for some weeks, a few are occasionally seen again; sometimes, in the first week in November, and that only for one day. Do they not withdraw and slumber in some hiding place during the interval? for we cannot suppose they had migrated to warmer climes and so returned again for one day. Is it not more probable that they are awakened from sleep, and like the bats are come forth to collect a little food? Bats appear at all seasons through the Autumn and Spring months, when the thermometer is at 50, because then phalænæ and moths are stirring.

These swallows looked like young ones.

WHITE.

Of their migration the proofs are such as will scarcely admit of a doubt. Sir Charles Wager and Captain Wright saw vast flocks of them at sea, when on their passage from one country to another, Our author, Mr. White, saw what he deemed the actual migration of these birds, and which he has described at p.111 of his History of Selborne; and of their congregating together on the roofs of churches and other buildings, and on trees, previous to their departure, many instances occur; particularly I once observed a large flock of house-martins on the roof of the church here at Catsfield, which acted exactly in the manner here described by Mr. White, sometimes preening their feathers and spreading their wings to the sun, and then flying off all together, but soon returning to their former situation. The greatest part of these birds seemed to be young ones. MARKWICK.

WAGTAILS.

While the cows are feeding in the moist low pastures, broods of wagtails, white and grey, run round them close up to their noses, and under their very bellies, availing themselves of the flies that settle on their legs, and probably finding worms and *larvæ* that are roused by the trampling of their feet. Nature is such an œconomist, that the most incongruous animals can avail themselves of each other!

Interest makes strange friendships.

WHITE.

Birds continually avail themselves of particular and unusual circumstances to procure their food; thus wagtails keep playing about the noses and legs of cattle as they feed, in quest of flies and other insects which abound near those animals; and great numbers of them will follow close to the plough to devour the worms, &c. that are turned up by that instrument. The redbreast attends the gardener when digging his borders; and will, with great familiarity and tameness, pick out the worms almost close to his spade, as I have frequently seen. Starlings and magpies very often sit on the backs of sheep and deer to pick out their ticks. MARKWICK.

WRYNECK.

These birds appear on the grass-plots and walks; they walk a little as well as hop, and thrust their bills into the turf, in quest, I conclude, of ants, which are their food. While they hold their bills in the grass, they draw out their prey with their tongues, which are so long as to be coiled round their heads. WHITE.

GROSBEAK.

Mr. B. shot a cock grosbeak, which he had observed to haunt his garden for more than a fortnight. I began to accuse this bird of making sad havock among the buds of the cherries, gooseberries, and wall-fruit of all the neighbouring orchards. Upon opening its crop or craw, no buds were to be seen; but a mass of kernels of the stones of fruits. Mr. B. observed that this bird frequented the spot where plum-trees grow; and that he had seen it with somewhat hard in its mouth, which it broke with difficulty; these were the stones of damsons. The Latin ornithologists call this bird *coccothraustes*, i. e. berry-breaker, because with its large horny beak it cracks and breaks the shells of stone fruits for the sake of the seed or kernel. Birds of this sort are rarely seen in England, and only in Winter. WHITE.

I have never seen this rare bird but during the severest cold of the hardest Winters: at which season of the year I have had in my possession two or three that were killed in this neighbourhood in different years. MARKWICK.

OBSERVATIONS

ON

QUADRUPEDS.

SHEEP.

The sheep on the downs this Winter (1769) are very ragged, and their coats much torn; the shepherds say, they tear their fleeces with their own mouths and horns, and they are always in that way in mild wet Winters, being teased and tickled with a kind of lice.

After ewes and lambs are shorn, there is great confusion and bleating, neither the dams nor the young being able to distinguish one another as before. This embarrassment seems not so much to arise from the loss of the fleece, which may occasion an alteration in their appearance, as from the defect of that *notus odor*, discriminating each individual personally; which also is confounded by the strong scent of the pitch and tar wherewith they are newly marked; for the brute creation recognize each other more from the smell than the sight; and in matters of identity and diversity appeal much more to their noses than their eyes. After sheep have been washed there is the same confusion, from the reason given above. WHITE.

RABBITS.

Rabbits make incomparably the finest turf, for they not only bite closer than larger quadrupeds, but they allow no bents to rise; hence warrens produce much the most delicate turf for gardens. Sheep never touch the stalks of grasses. WHITE.

CAT AND SQUIRRELS.

A boy has taken three little young squirrels in their nest, or drey as it is called in these parts. These small creatures he put under the care of a cat who had lately lost her kittens, and finds that she nurses and suckles them with the same assiduity and affection, as if they were her own offspring. This circumstance corroborates my suspicion, that the mention of exposed and deserted children being nurtured by female beasts of prey who had lost their young, may not be so improbable an incident as many have supposed; and therefore may be a justification of those authors who have gravely mentioned, what some have deemed to be a wild and improbable story.

So many people went to see the little squirrels suckled by a cat, that the foster mother became jealous of her charge, and in pain for their safety; and therefore hid them over the ceiling, where one died.

This circumstance shows her affection for these fondlings, and that she supposes the squirrels to be her own young. Thus hens, when they have hatched ducklings, are equally attached to them as if they were her own chickens. WHITE.

HORSE.

An old hunting mare, which ran on the common, being taken very ill, ran down into the village, as it were, to implore the help of men, and died the night following in the street. WHITE.

HOUNDS.

The king's stag-hounds came down to Alton, attended by a huntsman and six yeomen prickers, with horns, to try for the stag that has haunted Hartley Wood for so long a time. Many hundreds of people, horse and foot, attended the dogs to see the deer unharboured; but though the huntsman drew Hartley Wood, and Long Coppice, and Shrubwood, and Temple Hangers, and in their way back Hartley and Ward-le-ham Hangers, yet no stag could be found.

The royal pack, accustomed to have the deer turned out before them, never drew the coverts with any address and spirit, as many people that were present observed; and this remark the event has proved to be a true one. For as a person was lately pursuing a pheasant that was wing-broken in Hartley Wood, he stumbled upon the stag by accident, and ran in upon him as he lay concealed amidst a thick brake of brambles and bushes. WHITE.

OBSERVATIONS

ON

INSECTS AND VERMES.

INSECTS IN GENERAL.

The day and night insects occupy the annuals alternately: the papilios, muscæ and apes, are succeeded at the close of day by phalænæ, earwigs, woodlice, &c. In the dusk of the evening, when beetles begin to buz, partridges begin to call; these two circumstances are exactly coincident.

Ivy is the last flower that supports the hymenopterous and dipterous insects. On sunny days quite on to November they swarm on trees covered with this plant; and when they disappear, probably retire under the shelter of its leaves, concealing themselves between its fibres and the trees which it entwines. WHITE.

This I have often observed, having seen bees and other winged insects swarming about the flowers of the ivy, very late in the Autumn. MARKWICK.

Spiders, woodlice, lepismæ in cupboards and among sugar, some empedes, gnats, flies of several species, some phalænæ in hedges, earth-worms, &c. are stirring at all times, when Winters are mild; and are of great service to those soft-billed birds that never leave us.

On every sunny day the Winter through, clouds of insects usually called gnats (I suppose tipulæ and empedes) appear sporting and dancing over the tops of the evergreen trees in the shrubbery, and frisking about as if the business of generation was still going on. Hence it appears that these diptera (which by their sizes appear to be of different species) are not subject to a torpid state in the Winter, as most winged insects are. At night, and in frosty weather, and when it rains and blows, they seem to retire into those trees. They often are out in a fog. WHITE.

This I have also seen, and have frequently observed swarms of little winged insects playing up and down in the air in the middle of the Winter, even when the ground has been covered with snow.

MARKWICK.

HUMMING IN THE AIR.

There is a natural occurrence to be met with upon the highest part of our down in hot Summer days, which always amuses me much, without giving me any satisfaction with respect to the cause of it; and that is a loud audible humming of bees in the air, though not one insect is to be seen. This sound is to be heard distinctly the whole common through, from the Money-dells, to Mr. White's avenue gate. Any person would suppose that a large swarm of bees was in motion, and playing about over his head. This noise was heard last week, on June 28th.

> "Resounds the living surface of the ground,
> "Nor undelightful is the ceaseless *hum*
> "To him who muses ——— at noon."
> "Thick in yon stream of light a thousand ways,
> "Upward and downward, thwarting and convolv'd,
> "The quivering nations sport."
>
> THOMSON'S SEASONS.

WHITE.

CHAFFERS.

Cockchaffers seldom abound oftener than once in three or four years; when they swarm, they deface the trees and hedges. Whole woods of oaks are stripped bare by them.

Chaffers are eaten by the turkey, the rook, and the house-sparrow.

The *scarabæus solstitialis* first appears about June 26: they are very punctual in their coming out every year. They are a small species, about half the size of the May-chaffer, and are known in some parts by the name of the fern-chaffer. WHITE.

A singular circumstance relative to the cockchaffer, or as it is called here the May-bug, *scarabæus melolontha,* happened this year (1800):—My gardener in digging some ground found about six inches under the surface, two of these insects alive and perfectly formed so early as the 24th of March. When he brought them to me, they appeared to be as perfect and as much alive as in the midst of Summer, crawling about as briskly as ever: yet I saw no more of this insect till the 22nd of May, when it began to make its appearance. How comes it, that though it was perfectly formed so early as the 24th of March, it did not show itself above ground till nearly two months afterwards? MARKWICK.

PTINUS PECTINICORNIS.

Those maggots that make worm-holes in tables, chairs, bed-posts, &c. and destroy wooden furniture, especially where there is any sap, are the larvæ of the *ptinus pectinicornis*. This insect, it is probable, deposits its eggs on the surface, and the worms eat their way in.

In their holes they turn into their pupæ state, and so come forth winged in July: eating their way through the valances or curtains of a bed, or any other furniture that happens to obstruct their passage.

They seem to be most inclined to breed in beech; hence beech will not make lasting utensils, or furniture. If their eggs are deposited on the surface, frequent rubbing will preserve wooden furniture. WHITE.

BLATTA ORIENTALIS. COCKROACH.

A neighbour complained to me that her house was over-run with a kind of black beetle, or as she expressed herself, with a kind of black-bob, which swarmed in her kitchen when they got up in a morning before day-break.

Soon after this account, I observed an unusual insect in one of my dark chimney closets, and find since, that in the night they swarm also in my kitchen. On examination, I soon ascertained the species to be the *blatta orientalis* of Linnæus, and the *blatta molendinaria* of Mouffet. The male is winged; the female is not, but shows somewhat like the rudiments of wings, as if in the pupa state.

These insects belonged originally to the warmer parts of America, and were conveyed from thence by shipping to the East Indies; and by means of commerce begin to prevail in the more northern parts of Europe, as Russia, Sweden, &c. How long they have abounded in England I cannot say; but have never observed them in my house till lately.

They love warmth, and haunt chimney-closets, and the backs of ovens. Poda says that these and house-crickets will not associate together; but he is mistaken in that assertion, as Linnæus suspected he was. They are altogether night insects, *lucifugæ*, never coming forth till the rooms are dark and still, and escaping away nimbly at the approach of a candle. Their antennæ are remarkably long, slender, and flexile.

October 1790. After the servants are gone to bed, the kitchen hearth swarms with young crickets, and young *blattæ molendinariæ* of all sizes, from the most minute growth to their full proportions. They seem to live in a friendly manner together, and not to prey the one on the other.

August 1792. After the destruction of many thousands of *blattæ molendinariæ*, we find that at intervals a fresh detachment of old ones arrives, and particularly during this hot season: for the windows being left open in the evenings, the males come flying in at the casements from the neighbouring houses, which swarm with them. How the females, that seem to have no perfect wings that they can use, can contrive to get from house to house, does not so readily appear. These, like many insects, when they find their present abodes over-stocked, have powers of migrating to fresh quarters. Since the *blattæ* have been so much kept under, the crickets have greatly increased in number. WHITE.

GRYLLUS DOMESTICUS—HOUSE CRICKET.

November. After the servants are gone to bed, the kitchen hearth swarms with minute crickets not so large as fleas, which must have been lately hatched. So that these domestic insects, cherished by the influence of a constant large fire, regard not the season of the year, but produce their young at a time when their congeners are either dead, or laid up for the Winter, to pass away the uncomfortable months in the profoundest slumbers, and a state of torpidity.

When house-crickets are out, and running about in a room in the night, if surprised by a candle, they give two or three shrill notes, as it were for a signal to their fellows, that they may escape to their crannies and lurking holes, to avoid danger. WHITE.

CIMEX LINEARIS.

August 12, 1775. *Cimices lineares* are now in high copulation on ponds and pools. The females, who vastly exceed the males in bulk, dart and shoot along on the surface of the water with the males on their backs. When a female chooses to be disengaged, she rears, and jumps, and plunges, like an unruly colt; the lover thus dismounted, soon finds a new mate. The females, as fast as their curiosities are satisfied, retire to another part of the lake, perhaps to deposit their fœtus in quiet; hence the sexes are found separate, except where generation is going on. From the multitude of minute young of all gradations of sizes, these insects seem without doubt to be viviparous. WHITE.

PHALÆNA QUERCUS.

Most of our oaks are naked of leaves, and even the Holt in general, having been ravaged by the caterpillars of a small *phalæna* which is of a pale yellow colour. These insects, though a feeble race, yet, from their infinite numbers, are of wonderful effect, being able to destroy the foliage of whole forests and districts. At this season they leave their *aurelia*, and issue forth in their fly-state, swarming and covering the trees and hedges.

In a field at Greatham, I saw a flight of swifts busied in catching their prey near the ground; and found they were hawking after these *phalænæ*. The *aurelia* of this moth is shining and as black as jet; and lies wrapped up in a leaf of the tree, which is rolled round it, and secured at the ends by a web, to prevent the maggot from falling out. WHITE.

I suspect that the insect here meant is not the *phalæna quercus*, but the *phalæna* *viridata,* concerning which, I find the following note in my Naturalist's Calendar for the year 1785:

About this time, and for a few days last past, I observed the leaves of almost all the oak-trees in Denn copse to be eaten and destroyed, and, on examining more narrowly, saw an infinite number of small beautiful pale green moths flying about the trees; the leaves of which that were not quite destroyed were curled up, and withinside were the *exuviæ* or remains of the *chrysalis,* from whence I suppose the moths had issued, and whose caterpillar had eaten the leaves. MARKWICK.

EPHEMERA CAUDA BISETA.
MAY FLY.

June 10, 1771. Myriads of May flies appear for the first time on the Alresford stream. The air was crowded with them, and the surface of the water covered. Large trouts sucked them in as they lay struggling on the surface of the stream, unable to rise till their wings were dried.

This appearance reconciled me in some measure to the wonderful account that Scopoli gives of the quantities emerging from the rivers of Carniola. Their motions are very peculiar, up and down for many yards almost in a perpendicular line,

WHITE.

I once saw a swarm of these insects playing up and down over the surface of a pond in Denn park, exactly in the manner described by this accurate naturalist. It was late in the evening of a warm Summer's day when I observed them.

MARKWICK.

SPHYNX OCELLATA.

A vast insect appears after it is dusk, flying with a humming noise, and inserting its tongue into the bloom of the honeysuckle; it scarcely settles upon the plants, but feeds on the wing in the manner of humming birds. WHITE.

I have frequently seen the large bee moth, *sphinx stellatarum*, inserting its long tongue or proboscis into the centre of flowers, and feeding on their nectar, without settling on them, but keeping constantly on the wing. MARKWICK.

WILD BEE.

There is a sort of wild bee frequenting the garden-campion for the sake of its tomentum, which probably it turns to some purpose in the business of nidification. It is very pleasant to see with what address it strips off the pubes, running from the top to the bottom of a branch, and shaving it bare with all the dexterity of a hoop-shaver. When it has got a vast bundle, almost as large as itself, it flies away, holding it secure between its chin and its fore legs.

There is a remarkable hill on the downs near Lewes in Sussex, known by the name of Mount Carburn, which overlooks that town, and affords a most engaging prospect of all the country round, besides several views of the sea. On the very summit of this exalted promontory, and amidst the trenches of its Danish camp, there haunts a species of wild bee, making its nest in the chalky soil. When people approach the place, these insects begin to be alarmed, and, with a sharp and hostile sound, dash and strike round the heads and faces of intruders. I have often been interrupted myself while contemplating the grandeur of the scenery around me, and have thought myself in danger of being stung.

WHITE.

WASPS.

Wasps abound in woody wild districts far from neighbourhoods; they feed on flowers, and catch flies and caterpillars to carry to their young. Wasps make their nests with the raspings of sound timber; hornets, with what they gnaw from decayed: these particles of wood are kneaded up with a mixture of saliva from their bodies, and moulded into combs.

When there is no fruit in the gardens, wasps eat flies, and suck the honey from flowers, from ivy blossoms, and umbellated plants: they carry off also flesh from butchers shambles. WHITE.

In the year 1775 wasps abounded so prodigiously in this neighbourhood, that, in the month of August, no less than seven or eight of their nests were ploughed up in one field; of which there were several instances, as I was informed.

In the Spring, about the beginning of April, a single wasp is sometimes seen, which is of a larger size than usual; this I imagine is the queen or female wasp, the mother of the future swarm.

MARKWICK.

OESTRUS CURVICAUDA.

This insect lays its nits or eggs on horses' legs, flanks, &c. each on a single hair. The maggots when hatched do not enter the horses' skins, but fall to the ground. It seems to abound most in moist, moorish places, though sometimes seen in the uplands. WHITE.

NOSE FLY

About the beginning of July, a species of fly *(musca)* obtains, which proves very tormenting to horses, trying still to enter their nostrils and ears, and actually laying their eggs, in the latter of those organs, or perhaps in both. When these abound, horses in woodland districts become very impatient at their work, continually tossing their heads, and rubbing their noses on each other, regardless of the driver, so that accidents often ensue. In the heat of the day, men are often obliged to desist from ploughing. Saddle-horses are also very troublesome at such seasons. Country people call this insect the nose fly. WHITE.

Is not this insect the *oestrus nasalis* of Linnæus, so well described by Mr. Clark in the third volume of the Linnæan Transactions, under the name of *oestrus veterinus?* MARKWICK.

ICHNEUMON FLY.

I saw lately a small ichneumon fly attack a spider much larger than itself on a grass walk. When the spider made any resistance, the ichneumon applied her tail to him, and stung him with great vehemence, so that he soon became dead and motionless. The ichneumon then running backward drew her prey very nimbly over the walk into the standing grass. This spider would be deposited in some hole where the ichneumon would lay some eggs; and as soon as the eggs were hatched, the carcase would afford ready food for the maggots.

Perhaps some eggs might be injected into the body of the spider, in the act of stinging. Some ichneumons deposit their eggs in the aurelia of moths and butterflies. WHITE.

In my Naturalist's Calendar for 1795, July 21st, I find the following note:

It is not uncommon for some of the species of ichneumon flies to deposit their eggs in the chrysalis of a butterfly: some time ago I put two of the chrysalis of a butterfly into a box and covered it with gauze, to discover what species of butterfly they would produce; but instead of a butterfly, one of them produced a number of small ichneumon flies.

There are many instances of the great service these little insects are to mankind in reducing the number of noxious insects, by depositing their eggs in the soft bodies of their *larvæ;* but none more remarkable than that of the ichneumon *tipula,* which pierces the tender body and deposits its eggs in the *larva* of the *tipula tritici*, an insect which, when it abounds greatly, is very prejudicial to the grains of wheat. This operation I have frequently seen it perform with wonder and delight.

MARKWICK.

BOMBYLIUS MEDIUS.

The *bombylius medius* is much about in March and the beginning of April, and soon seems to retire. It is an hairy insect, like an humble-bee, but with only two wings, and a long straight beak, with which it sucks the early flowers. The female seems to lay its eggs as it poises on its wings, by striking its tail on the ground, and against the grass that stands in its way, in a quick manner, for several times together. WHITE.

I have often seen this insect fly with great velocity, stop on a sudden, hang in the air in a stationary position for some time, and then fly off again; but do not recollect having ever seen it strike its tail against the ground, or any other substance.

MARKWICK.

MUSCÆ.—FLIES.

In the decline of the year, when the mornings and evenings become chilly, many species of flies *(muscæ)* retire into houses, and swarm in the windows.

At first they are very brisk and alert; but as they grow more torpid, one cannot help observing that they move with difficulty, and are scarce able to lift their legs, which seem as if glued to the glass; and by degrees many do actually stick on till they die in the place.

It has been observed that divers flies, besides their sharp hooked nails, have also skinny palms, or flaps to their feet, whereby they are enabled to stick on glass and other smooth bodies, and to walk on ceilings with their backs downward, by means of the pressure of the atmosphere on those flaps; the weight of which they easily overcome in warm weather when they are brisk and alert. But in the decline of the year, this resistance becomes too mighty for their diminished strength; and we see flies labouring along, and lugging their feet in windows as if they stuck fast to the glass, and it is with the utmost difficulty they can draw one foot after another, and disengage their hollow caps from the slippery surface.

Upon the same principle that flies stick and support themselves, do boys, by way of play, carry heavy weights by only a piece of wet leather at the end of a string clapped close on the surface of a stone.

WHITE.

TIPULÆ, OR EMPEDES.

May. Millions of *empedes*, or *tipulæ*, come forth at the close of day, and swarm to such a degree as to fill the air. At this juncture they sport and copulate; as it grows more dark they retire. All day they hide in the hedges. As they rise in a cloud they appear like smoke.

I do not ever remember to have seen such swarms, except in the fens of the Isle of Ely. They appear most over grass grounds. WHITE.

APHIDES.

On the 1st of August, about half an hour after three in the afternoon, the people of Selborne were surprised by a shower of Aphides which fell in these parts. They who were walking the streets at that time found themselves covered with these insects, which settled also on the trees and gardens, and blackened all the vegetables where they alighted. These armies, no doubt, were then in a state of emigration, and shifting their quarters; and might perhaps come from the great hop-plantations of Kent or Sussex, the wind being that day at North. They were observed at the same time at Farnham, and all along the vale at Alton. WHITE.

ANTS.

August 23. Every ant-hill about this time is in a strange hurry and confusion; and all the winged ants, agitated by some violent impulse, are leaving their homes, and, bent on emigration, swarm by myriads in the air, to the great emolument of the hirundines, which fare luxuriously. Those that escape the swallows return no more to their nests, but looking out for fresh settlements, lay a foundation for future colonies. All the females at this time are pregnant: the males that escape being eaten, wander away and die.

October 2. Flying-aunts, male and female, usually swarm and migrate on hot sunny days in August and September; but this day a vast emigration took place in my garden, and myriads came forth, in appearance from the drain which goes under the fruit wall; filling the air and the adjoining trees and shrubs with their numbers. The females were full of eggs. This late swarming is probably owing to the backward, wet season. The day following, not one flying ant was to be seen.

Horse-ants travel home to their nests laden with flies, which they have caught, and the aureliæ of smaller ants, which they seize by violence. WHITE.

In my Naturalist's Calendar for the year 1777, on September 6th, I find the following note to the article Flying Ants:

I saw a prodigious swarm of these ants flying about the top of some tall elm-trees (close by my house); some were continually dropping to the ground as if from the trees, and others rising up from the ground: many of them were joined together in copulation; and I imagine their life is but short, for as soon as produced from the egg by the heat of the sun, they propagate their species, and soon after perish. They were black, somewhat like the small black ant, and had four wings. I saw also, at another place, a large sort which were yellowish. On the 8th of September, 1785, I again observed the same circumstance of a vast number of these insects flying near the tops of the elms and dropping to the ground.

On the 2nd of March, 1777, I saw great numbers of ants come out of the ground.

MARKWICK.

GLOW-WORMS.

By observing two glow-worms which were brought from the field to the bank in the garden, it appeared to us, that these little creatures put out their lamps between eleven and twelve, and shine no more for the rest of the night.

Male glow-worms, attracted by the light of the candles, come into the parlour.

WHITE.

EARTH-WORMS.

Earth-worms make their casts most in mild weather about March and April; they do not lie torpid in Winter, but come forth when there is no frost; they travel about in rainy nights, as appears from their sinuous tracks on the soft muddy soil, perhaps in search of food.

When earth-worms lie out a-nights on the turf, though they extend their bodies a great way, they do not quite leave their holes, but keep the ends of their tails fixed therein, so that on the least alarm they can retire with precipitation under the earth. Whatever food falls within their reach when thus extended, they seem to be content with, such as blades of grass, straws, fallen leaves, the ends of which they often draw into their holes; even in copulation their hinder parts never quit their holes; so that no two, except they lie within reach of each other's bodies, can have any commerce of that kind; but as every individual is an hermaphrodite, there is no difficulty in meeting with a mate, as would be the case were they of different sexes.

WHITE.

SNAILS AND SLUGS.

The shell-less snails called slugs are in motion all the Winter in mild weather, and commit great depredations on garden plants, and much injure the green wheat, the loss of which is imputed to earthworms; while the shelled snail, the φερεοικος, does not come forth at all till about April 10th, and not only lays itself up pretty early in Autumn, in places secure from frost, but also throws out round the mouth of its shell a thick operculum formed from its own saliva; so that it is perfectly secured, and corked up as it were, from all inclemencies. The cause why the slugs are able to endure the cold so much better than shell-snails is, that their bodies are covered with slime as whales are with blubber.

Snails copulate about Midsummer; and soon after deposit their eggs in the mould by running their heads and bodies under ground. Hence the way to be rid of them is, to kill as many as possible before they begin to breed.

Large, grey, shell-less, cellar snails lay themselves up about the same time with those that live abroad; hence it is plain that a defect of warmth is not the only cause that influences their retreat.

WHITE.

SNAKES SLOUGH.

——There the snake throws her enamell'd skin.
Shakespeare, Mids. Night's Dream.

About the middle of this month (September) we found in a field near a hedge the slough of a large snake, which seemed to have been newly cast. From circumstances it appeared as if turned wrong side outward, and as drawn off backward, like a stocking or woman's glove. Not only the whole skin, but scales from the very eyes, are peeled off, and appear in the head of the slough like a pair of spectacles. The reptile, at the time of changing his coat, had entangled himself intricately in the grass and weeds, so that the friction of the stalks and blades might promote this curious shifting of his exuviæ.

> ———————"Lubrica serpens
> "Exuit in spinis vestem." *Lucret.*

It would be a most entertaining sight could a person be an eye-witness to such a feat, and see the snake in the act of changing his garment. As the convexity of the scales of the eyes in the slough is now inward, that circumstance alone is a proof that the skin has been turned: not to mention that now the present inside is much darker than the outer. If you look through the scales of the snake's eyes from the concave side, viz. as the reptile used them, they lessen objects much. Thus it appears from what has been said, that snakes crawl out of the mouth of their own sloughs, and quit the tail part last, just as eels are skinned by a cook maid. While the scales of the eyes are growing loose, and a new skin is forming, the creature, in appearance, must be blind, and feel itself in an awkward uneasy situation. WHITE.

I have seen many sloughs or skins of snakes entire, after they have cast them off; and once in particular I remember to have found one of these sloughs so intricately interwoven amongst some brakes that it was with difficulty removed without being broken: this undoubtedly was done by the creature to assist in getting rid of its incumbrance.

I have great reason to suppose that the eft or common lizard also casts its skin or slough, but not entire like the snake; for on the 30th of March, 1777, I saw one with something ragged hanging to it, which appeared to be part of its old skin.

MARKWICK.

OBSERVATIONS

ON

VEGETABLES.

TREES, ORDER OF LOSING THEIR LEAVES.

ONE of the first trees that become naked is the walnut; the mulberry, the ash, especially if it bears many keys, and the horse-chesnut come next. All lopped trees, while their heads are young, carry their leaves a long while. Apple-trees and peaches remain green very late, often till the end of November: young beeches never cast their leaves till Spring, till the new leaves sprout and push them off: in the Autumn the beechen-leaves turn of a deep chesnut colour. Tall beeches cast their leaves about the end of October.

WHITE.

SIZE AND GROWTH.

Mr. Marsham of Stratton, near Norwich, informs me by letter thus: " I became a planter early; so that an oak which I planted in 1720 is become now, at 1 foot from the earth, 12 feet 6 inches in circumference, and at 14 feet (the half of the timber length) is 8 feet 2 inches. So if the bark was to be measured as timber, the tree gives 116½ feet, buyer's measure. Perhaps you never heard of a larger oak while the planter was living. I flatter myself that I increased the growth by washing the stem, and digging a circle as far as I supposed the roots to extend, and by spreading sawdust, &c. as related in the Phil. Trans. I wish I had begun with beeches (my favourite trees as well as yours), I might then have seen very large trees of my own raising. But I did not begin with beech till 1741, and then by seed; so that my largest is now at five feet from the ground, 6 feet 3 inches in girth, and with its head spreads a circle of 20 yards diameter. This tree was also dug round, washed, &c." *Stratton*, 24 *July*, 1790.

The circumference of trees planted by myself at 1 foot from the ground (1790.)

			feet.	inches.
Oak in	1730	- -	4	5
Ash	1730	- -	4	6½
Great fir	1751	- -	5	0
Greatest beech	1751	- -	4	0
Elm	1750	- -	5	3
Lime	1756	- -	5	5

The great oak in the Holt, which is deemed by Mr. Marsham to be the biggest in this island, at 7 feet from the ground, measures in circumference 34 feet. It has in old times lost several of its boughs, and is tending to decay. Mr. Marsham computes, that at 14 feet length this oak contains 1,000 feet of timber.

It has been the received opinion that trees grow in height only by their annual upper shoot. But my neighbour over the way, whose occupation confines him to one spot, assures me that trees are expanded and raised in the lower parts also. The reason that he gives is this: the point of one of my firs began for the first time to peer over an opposite roof at the beginning of Summer; but before the growing season was over, the whole shoot of the year, and three or four joints of the body beside, became visible to him as he sits on his form in his shop. According to this supposition, a tree may advance in height considerably, though the Summer shoot should be destroyed every year. WHITE.

FLOWING OF SAP.

If the bough of a vine is cut late in the Spring, just before the shoots push out, it will bleed considerably; but after the leaf is out, any part may be taken off without the least inconvenience. So oaks may be barked while the leaf is budding; but as soon as they are expanded, the bark will no longer part from the wood, because the sap that lubricates the bark and makes it part, is evaporated off through the leaves.

WHITE.

RENOVATION OF LEAVES.

When oaks are quite stripped of their leaves by chaffers, they are clothed again soon after Midsummer with a beautiful foliage: but beeches, horse-chestnuts and maples, once defaced by those insects, never recover their beauty again for the whole season. WHITE.

ASH TREES.

Many ash trees bear loads of keys every year, others never seem to bear any at all. The prolific ones are naked of leaves and unsightly; those that are steril abound in foliage, and carry their verdure a long while, and are pleasing objects. WHITE.

BEECH.

Beeches love to grow in crowded situations, and will insinuate themselves through the thickest covert, so as to surmount it all: are therefore proper to mend thin places in tall hedges. WHITE.

SYCAMORE..

May 12. The sycamore or great maple is in bloom, and at this season makes a beautiful appearance, and affords much pabulum for bees, smelling strongly like honey. The foliage of this tree is very fine, and very ornamental to outlets. All the maples have saccharine juices.

WHITE.

GALLS OF LOMBARDY POPLAR.

The stalks and ribs of the leaves of the Lombardy poplar are embossed with large tumours of an oblong shape, which by incurious observers have been taken for the fruit of the tree. These galls are full of small insects, some of which are winged, and some not. The parent insect is of the genus of *cynips*. Some poplars in the garden are quite loaded with these excrescences. WHITE.

CHESTNUT TIMBER.

John Carpenter brings home some old chestnut-trees which are very long; in several places the wood-peckers had begun to bore them. The timber and bark of these trees are so very like oak, as might easily deceive an indifferent observer, but the wood is very shakey, and towards the heart *cup-shakey* (that is to say, apt to separate in round pieces like cups), so that the inward parts are of no use. They are bought for the purpose of cooperage, but must make but ordinary barrels, buckets, &c. Chestnut sells for half the price of oak; but has sometimes been sent into the king's dock, and passed off instead of oak.

WHITE.

LIME BLOSSOMS.

Dr. Chandler tells, that in the south of France, an infusion of the blossoms of the lime tree, *tilia*, is in much esteem as a remedy for coughs, hoarsenesses, fevers, &c. and that at Nismes, he saw an avenue of limes that was quite ravaged and torn in pieces by people greedily gathering the bloom, which they dried and kept for these purposes.

Upon the strength of this information we made some tea of lime blossoms, and found it a very soft, well-flavoured, pleasant, saccharine julep, in taste much resembling the juice of liquorice. WHITE.

BLACKTHORN.

This tree usually blossoms while cold N. E. winds blow; so that the harsh rugged weather obtaining at this season, is called by the country-people, blackthorn winter. WHITE.

IVY BERRIES.

Ivy berries afford a noble and providential supply for birds in Winter and Spring; for the first severe frost freezes and spoils all the haws, sometimes by the middle of November; ivy berries do not seem to freeze. WHITE.

HOPS.

The culture of Virgil's vines corresponded very exactly with the modern management of hops. I might instance in the perpetual diggings and hoeings, in the tying to the stakes and poles, in pruning the superfluous shoots, &c. but lately I have observed a new circumstance, which was, a neighbouring farmer's harrowing between the rows of hops with a small triangular harrow, drawn by one horse, and guided by two handles. This occurrence brought to my mind the following passage:

> ——————— " ipsa
> " Flectere luctantes inter vineta juvencos."
>
> *Georgic* II.

Hops are diécious plants: hence perhaps it might be proper, though not practised, to leave purposely some male plants in every garden, that their farina might impregnate the blossoms. The female plants without their male attendants are not in their natural state: hence we may suppose the frequent failure of crop so incident to hop-grounds; no other growth, cultivated by man, has such frequent and general failures as hops.

Two hop-gardens much injured by a hail-storm, June 5, show now (September 2) a prodigious crop, and larger and fairer hops than any in the parish. The owners seem now to be convinced that the hail, by beating off the tops of the binds, has increased the side-shoots, and improved the crop. Query. Therefore should not the tops of hops be pinched off when the binds are very gross, and strong?

WHITE.

SEED LYING DORMANT.

The naked part of the Hanger is now covered with thistles of various kinds. The seeds of these thistles may have lain probably under the thick shade of the beeches for many years, but could not vegetate till the sun and air were admitted. When old beech trees are cleared away, the naked ground in a year or two becomes covered with strawberry plants, the seeds of which must have lain in the ground for an age at least. One of the *slidders* or trenches down the middle of the Hanger, close covered over with lofty beeches near a century old, is still called *strawberry-slidder*, though no strawberries have grown there in the memory of man. That sort of fruit did once, no doubt, abound there, and will again when the obstruction is removed. WHITE.

BEANS SOWN BY BIRDS.

Many horse-beans sprang up in my field-walks in the Autumn, and are now grown to a considerable height. As the Ewel was in beans last Summer, it is most likely that these seeds came from thence; but then the distance is too considerable for them to have been conveyed by mice. It is most probable therefore that they were brought by birds, and in particular by jays and pies, who seem to have hid them among the grass and moss, and then to have forgotten where they had stowed them. Some peas are growing also in the same situation, and probably under the same circumstances. WHITE.

CUCUMBERS SET BY BEES.

If bees, who are much the best setters of cucumbers, do not happen to take kindly to the frames, the best way is to tempt them by a little honey put on the male and female bloom. When they are once induced to haunt the frames, they set all the fruit, and will hover with impatience round the lights in a morning, till the glasses are opened. *Probatum est.* WHITE.

WHEAT.

A notion has always obtained, that in England hot Summers are productive of fine crops of wheat; yet in the years 1780 and 1781, though the heat was intense, the wheat was much mildewed, and the crop light. Does not severe heat, while the straw is milky, occasion its juices to exude, which being extravasated, occasion spots, discolour the stems and blades, and injure the health of the plants? WHITE.

TRUFFLES.

August. A truffle-hunter called on us, having in his pocket several large truffles found in this neighbourhood. He says these roots are not to be found in deep woods, but in narrow-hedge rows and the skirts of coppices. Some truffles, he informed us, lie two feet within the earth, and some quite on the surface; the latter, he added, have little or no smell, and are not so easily discovered by the dogs as those that lie deeper. Half-a-crown a pound was the price which he asked for this commodity.

Truffles never abound in wet Winters and Springs. They are in season in different situations, at least nine months in the year. WHITE.

TREMELLA NOSTOC.

Though the weather may have been ever so dry and burning, yet after two or three wet days, this jelly-like substance abounds on the walks. WHITE.

FAIRY RINGS.

The cause, occasion, call it what you will, of *fairy-rings*, subsists in the turf, and is conveyable with it: for the turf of my garden-walks, brought from the down above, abounds with those appearances, which vary their shape, and shift situation continually, discovering themselves now in circles, now in segments, and sometimes in irregular patches and spots. Wherever they obtain, puff-balls abound; the seeds of which were doubtless brought in the turf. WHITE.

METEOROLOGICAL OBSERVATIONS.

BAROMETER.

November 22, 1768. A remarkable fall of the barometer all over the kingdom. At Selborne we had no wind, and not much rain; only vast, swagging, rock-like clouds, appeared at a distance. White.

PARTIAL FROST.

The country people, who are abroad in Winter mornings long before sun-rise, talk much of hard frost in some spots, and none in others. The reason of these partial frosts is obvious, for there are at such times partial fogs about; where the fog obtains, little or no frost appears: but where the air is clear, there it freezes hard. So the frost takes place either on hill or in dale, wherever the air happens to be clearest and freest from vapour. WHITE.

THAW.

Thaws are sometimes surprisingly quick, considering the small quantity of rain. Does not the warmth at such times come from below? The cold in still, severe seasons seems to come down from above: for the coming over of a cloud in severe nights raises the thermometer abroad at once full ten degrees. The first notices of thaws often seem to appear in vaults, cellars, &c.

If a frost happens, even when the ground is considerably dry, as soon as a thaw takes place, the paths and fields are all in a batter. Country people say that the frost draws moisture. But the true philosophy is, that the steam and vapours continually ascending from the earth, are bound in by the frost, and not suffered to escape till released by the thaw. No wonder then that the surface is all in a float; since the quantity of moisture by evaporation that arises daily from every acre of ground is astonishing. WHITE.

FROZEN SLEET.

January 20. Mr. H.'s man says that he caught this day, in a lane near Hackwood park, many rooks, which, attempting to fly, fell from the trees with their wings frozen together by the sleet, that froze as it fell. There were, he affirms, many dozen so disabled. WHITE.

MIST, CALLED LONDON SMOKE.

This is a blue mist which has somewhat the smell of coal smoke, and as it always comes to us with a N. E. wind, is supposed to come from London. It has a strong smell, and is supposed to occasion blights. When such mists appear they are usually followed by dry weather.

WHITE.

REFLECTION ON FOG.

When people walk in a deep white fog by night with a lanthorn, if they will turn their backs to the light, they will see their shades impressed on the fog in rude gigantic proportions. This phenomenon seems not to have been attended to, but implies the great density of the meteor at that juncture. WHITE.

HONEY DEW.

June 4, 1783. Vast honey dews this week. The reason of these seems to be, that in hot days the effluvia of flowers are drawn up by a brisk evaporation, and then in the night fall down with the dews with which they are entangled.

This clammy substance is very grateful to bees, who gather it with great assiduity, but it is injurious to the trees on which it happens to fall, by stopping the pores of the leaves. The greatest quantity falls in still close weather; because winds disperse it, and copious dews dilute it, and prevent its ill effects. It falls mostly in hazy warm weather. WHITE.

MORNING CLOUDS.

After a bright night and vast dew, the sky usually becomes cloudy by eleven or twelve o'clock in the forenoon, and clear again towards the decline of the day. The reason seems to be, that the dew, drawn up by evaporation, occasions the clouds; which, towards evening, being no longer rendered buoyant by the warmth of the sun, melt away, and fall down again in dews. If clouds are watched in a still warm evening, they will be seen to melt away, and disappear. WHITE.

DRIPPING WEATHER AFTER DROUGHT.

No one that has not attended to such matters, and taken down remarks, can be aware how much ten days dripping weather will influence the growth of grass or corn after a severe dry season. This present summer, 1776, yielded a remarkable instance; for till the 30th of May the fields were burnt up and naked, and the barley not half out of the ground; but now, June 10, there is an agreeable prospect of plenty. WHITE.

AURORA BOREALIS

November 1, 1787. The N. aurora made a particular appearance, forming itself into a broad, red, fiery belt, which extended from E. to W. across the welkin: but the moon rising at about ten o'clock, in unclouded majesty, in the E. put an end to this grand, but awful meteorous phenomenon. WHITE.

BLACK SPRING, 1771.

Dr. Johnson says, that "in 1771 the season was so severe in the island of Sky, that it is remembered by the name of the *black spring*. The snow, which seldom lies at all, covered the ground for eight weeks, many cattle died, and those that survived were so emaciated that they did not require the male at the usual season." The case was just the same with us here in the south; never were so many barren cows known as in the spring following that dreadful period. Whole dairies missed being in calf together.

At the end of March the face of the earth was naked to a surprising degree. Wheat hardly to be seen, and no signs of any grass; turnips all gone, and sheep in a starving way. All provisions rising in price. Farmers cannot sow for want of rain. WHITE.

OBSERVATIONS

ON SOME PASSAGES IN

MR. WHITE'S NATURAL HISTORY

OF

SELBORNE.

VOL. 1.

Page 14. There is a village in the west of England remarkable for the quantity it possesses of the "Cornu Ammonis." The name of it is Keynsham, between Bath and Bristol. 'This has given rise to a fabulous legend, which says that St. Keyna, from whom the place takes its name, resided here in a solitary wood full of venomous serpents, and her prayers converted them into stones, which still retain their shape.' See Espriella's Letters from England, v. 3. p. 362.

P. 35. The description of the conflagration arising from the *heath-fires* here mentioned, reminds the scholar of the '*stubble-burning*' described in Virgil's Georgics, i. 84, and the commentary on the passage, by the elegant and learned Mr. Holdsworth, p. 52. Compare Virgilii Æn. 2. 304. Ovid. Epist. xv. 9. Sil. Ital. vii. 365.

P. 46. *German Boars and Sows* were also turned out by Charles the First in the New Forest, which bred and increased. Their stock is supposed to exist now, remarkable for the smallness of their hind quarters. See an engraving of one in Gilpin's Forest Scenery, ii. 118.

P. 50. The "*Black-cap*," which Mr. White calls a delicate songster, is classed very highly by Mr. D. Barrington, in his scale of singing birds. See also Pennant's Brit. Zoology, v. i. p. 374.

P. 54. The most curious account of the "*Cross-bill*," (Loxia Curvirostra) was published by Dr. Townson, who kept them tame. See his Tracts on Natural History, p. 116.

P. 58. The 'Falco Peregrinus,' sent by Mr. White to Mr. Pennant, is a rare bird. One of them was caught some years ago in Norfolk, in a trap baited with a woodcock. Another was killed in January 1812 (this present month) in Sussex, while fighting with a raven. This falcon breeds on Glenmore, and other rocks in the Highlands. See Pennant's Scotland, v. i. p. 277.

P. 63. There certainly does exist a difficulty in conceiving how some of the Birds of Passage, such feeble and bad fliers, should be able to migrate to such a vast distance; but some of our wonder will perhaps diminish when we read the account of the manner in which the *Quail* crosses the Mediterranean, for the coast of Africa. 'Towards the end of September, the Quails avail themselves of a northerly wind to take their departure from

grinus used to nestle in Craven Falls

- very recent period of time the Species pe-

[illegible]

Europe, and flapping one wing, while they present the other to the gale, half sail, half oar, they graze the billows of the Mediterranean with their fattened rumps, and bury themselves in the sands of Africa, that they may serve as food to the famished inhabitants of Zara.' St. Pierre's Studies of Nature, v. 1. p. 91.

P. 73. Mr. White mentions a notion among the country people in Hampshire, that there exists a species of the 'Genus Mustelinum,' reddish, not much bigger than a field-mouse, called a '*Cane*,' and distinct from the weasel, stoat, &c. This I believe to be a pretty general error among the country people also in other counties. This imaginary animal in Suffolk is called the '*Mouse-hunt*,' from its being supposed to live on mice. To discover the truth of this report, I managed to have several of these animals brought to me; all of which I found to be the *common weazel*. The error I conceive partly to have arisen from this animal, like most others, appearing less than its real size, when running and attempting to escape, a circumstance well known to the hunters in India, with respect to larger animals, as the tiger, &c.

P. 74. Mr. White has justly remarked, 'that food has great influence on the colour of animals.' The dark colour in *wild* birds is a great safeguard to them against their enemies; and this is the reason, that among birds of bright plumage, the young do not assume their gay colours till the second or third year, as the cygnet, the gold and silver pheasants, &c. The remarkable change of plumage among the *gull* tribe, is a curious and intricate subject. Is the circumstance mentioned by Mr. Pegge true, 'that butterflies partake the colour of the flowers they feed on?' I think not. See Anonymiana, p. 469.

P. 84. Concerning the reason of frogs coming out in rainy weather, the reader will be amply gratified, by referring to the experiments made by Dr. Townson on his two frogs, *Damon* and *Musidora.* See his Tracts, p. 50. The general result of which has proved the following curious fact:—" that frogs take in their supply of liquid through the *skin* alone, all the aqueous fluid which they take in being absorbed by the skin, and all they reject being transpired through it." One frog in an hour and half absorbed nearly its own weight of water.

P. 139. The very beautiful, one may almost say *poetical* way, in which the *male* bird procures a mate by the power of his song, may be seen in the preface to Mr. Montagu's Ornithological Dictionary, p. xxx; from which this corollary may be inferred, that if a confined bird had learned the song of *another*, without retaining any part of its *natural notes*, and was set at liberty, it is probable, it would never find a mate of its own.

P. 152. The 'bustard,' is extinct in Scotland: and as it is now so scarce in England, owing to population and enclosures, it becomes interesting to remark, that two birds of this kind, (male and female) have been kept in the garden ground belonging to Norwich Infirmary, and have but lately been sold by the owner of them. The male bird was very beautiful and courageous, apparently afraid of nothing, seizing any one that came near him by the coat; yet on the appearance of any small hawk high in the air, he would squat close to the ground, expressing strong marks of fear. The female was very shy. A tolerably good resemblance of the male is in Pennant's British Zoology, v. 1. p. 284.

P. 167. Concerning swallows, the reader will see, that Mr. White appears to incline more and more in favour of their *torpidity*, and against their *migration*. Mr. D. Barrington is still more positive on the same side of the question. See his Miscellanies, p. 225. The ancients generally mention this bird, as wintering in Africa. See Anacreon, λγ. ed. Brunk. p. 38. The Rhodians had a festival called χελιδόνια, when the boys brought about young swallows; the song which they sang, may be seen in the works of Meursius. v. 3. p. 974. fol.

Ἦλθε, Ἦλθε, χελιδὼν καλὰς,
Ὥ'ρας ἄγουσα, καὶ καλοὺς Ἐνιαυτοὺς
Ἔπι γάστερα λευκὰ, κ᾽ἄπι νῶτα μέλαινα.

" He comes ! He comes ! who loves to bear
" Soft sunny hours, and seasons fair ;—
" The swallow hither comes to rest
" His sable wing, and snowy breast."

And alluding to this custom, Avienus, (who may be considered only as a very bad translator of an excellent poem, the Periegesis of Dionysius), thus says, v. 705,

" Nam cum vere novo, tellus se dura relaxat,
Culminibusq. cavis, blandum strepit ales hirundo
Gens devota choros agitat !"

From a passage in the 'Birds' of Aristophanes, we learn that among the Greeks, the *crane* pointed out the time of *sowing;* the arrival of the *kite,* the time of sheep-shearing; and the *swallow,* the time to put on *summer-clothes.* According to the Greek Calendar of Flora, kept by Theophrastus at Athens, the Ornithian winds blow, and the swallow comes between the 28th of February, and the 12th of March; the kite and nightingale appear between the 11th and 26th of March; the cuckoo appears at the same time the young figs come out, thence his name. See Stillingfleet's Tracts on Natural History, p. 324.

P. 210. Since this letter of Mr. White's, much has been added to our knowledge of the cuckoo, by the patient attention of Dr. Jenner. Concerning the singing of the cuckoo, mentioned by Mr. White at p. 242, I will add the following curious memoranda from the 7th Volume of the Transactions of the Linnæan Society. "The cuckoo begins early in the season with the interval of a *minor third,* the bird then proceeds to a *major third,* next to a *fourth,* then a *fifth,* after which his voice breaks without attaining a *minor sixth.*" This curious circumstance was however observed very long ago; and it forms the subject of an Epigram in that scarce black-letter volume, the 'Epigrams of John Heywood, 1587.'

OF USE. 95.

"Use maketh maistry, this hath been said alway,
"But all is not alway, as all men do say,

"In Aprill, the koocoo can sing her song by rote,
"In June, of tune, she cannot sing a note:
"At first, koo coo, koo coo sing still can she do,
"At last kooke, kooke, kooke; six kookes to one koo!"

P. 247, Mr. White says, it is strange that *rooks* and *starlings* accompany each other: but this is the case with other birds; the short-eared *owl* often accompanies flights of *woodcocks* in this country. See Pennant's Scotland, i. p. 11. In Greece, the *cuckoo* migrates with the *turtle*-flocks, thence they call him trigonokracti, or turtle-leader.

P. 251. The motion of the tortoise's legs being, as Mr. White remarks, *ridiculously slow*, is taken notice of in Homer's hymn to Hermes, v. 28.

βοσκομένη προπάροιθε δομῶν, ἐριθήλεα ποιὴν
Σαυλὰ ποσὶν βαινοῦσα.

"Feeding far off from man, the flowery herb,
Slow-moving with his feet."

P. 259. Mr. White has observed, that the *owl* returns to its young with food once in *five minutes.* Mr. Montagu has observed, that the wren returns once in *two* minutes, or upon an average thirty-six times in an hour; and this continued full sixteen hours in a day, which if equally divided between eight young ones, each would receive seventy-two feeds in the day, the whole amounting to five hundred and seventy-six. See Ornitholog. Dict. p. 35. To this, I will add, that the swallow never fails to return to its nest at the expiration of every second or third minute.

P. 281. Mr. White says, that no *wheatears* are taken to the *westward* of Houghton-bridge, on the river Arun; it appears, however, that is not the case. See the note to Mrs. Charlotte Smith's Poems, 1807, p. 168.

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P. 26. As our Saxon ancestors called the month of February 'Sprout-Cale,' so the names of many other months were equally significant; viz. *March*, Stormy month; *May*, Trimilki, the cows then being milked three times a day; *June*, dig and weed month; *September*, barley month, &c.

P. 105. What Mr. White has remarked of the *fishes of Japan* thriving in our climate, is true also of the *plants;* the trees and shrubs brought from the Japonese islands bearing our winters, and growing freely: as for instance, that beautiful tree, the 'Gingko,' now called by Dr. Smith, the *Salisburia;* and the no less beautiful and scarce 'Sophora Japonica,' the finest specimens of which trees now in England, are probably in the curious garden of John Orde, Esq. at Fulham. As I am on this subject, I will mention that the garden belonging to the palace of the Bishop of London at Fulham, the earliest receptacle of scarce and foreign trees in this country, is now almost worn out. Not above twelve of the original trees could be found in the survey made in 1793. I remarked in 1811, that some of these were gone, but the pinaster and the ilex remain.

P. 154. To this most awful summer of 1783, Cowper also alludes, in his Task, Book ii. p. 41.

............" A world that seems
To toll the death-bell of its own decease;
And by the voice of all the elements
To preach the general doom."—

P. 202. Mr. White observes, that birds of prey, as hawks, feed on insects. There is reason to believe, that *insects* form also part of the food even of the *larger beasts* of prey. " Beetles, flies, worms, form part of the *lion* and *tiger*'s food, as they do that of the *fox*." See Jarrold's Dissert. on Man.

P. 212. Concerning the " hybrid pheasant," see the account by John Hunter, in the Philosophical Transact. Art. xxx. 1760. " The subject of the account is a *hen* pheasant with the feathers of the cock. The author concludes, that it is most probable that all those *hen* pheasants which are found *wild*, and have the feathers of the *cock*, were formerly perfect *hens*, but that now they are changed with age, and perhaps by certain constitutional circumstances." It appears also, that the *hen* taking the plumage of the *cock*, is not confined to the pheasant alone, it takes place also with the *pea-hen*, as may be seen in the specimen belonging to Lady Tynte, which was in the Leverian Museum. After many broods, this hen took much of the plumage of the cock, and also the fine train belonging to that bird. See also Montagu's Ornitholog. Dict. Art. Pheasant.

P. 251. The squirrel's nest is not only called a *drey* in Hampshire, but also in other counties; in Suffolk it is called a *bay*. The word 'drey,' though now provincial, I have met with in some of our old writers.

P. 303. It will hardly be deemed a discredit to an observer so patient, so accurate, and so faithful, as Mr. White, to mention, that his conjecture concerning the origin of *honey-dew* is erroneous; the subject has been elucidated by the observations of Mr. William Curtis, who has discovered it to be the "*excrement of the aphides.*" See Transact. of the Linnæan Society, vol. vi. No. 4.

J. M.

Benhall, Suffolk,
20*th January*, 1812.

SUMMARY

OF THE

WEATHER.

Measure of Rain in Inches and Hundreds.

Year.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1782.	4.64	1.98	6.54	4.57	6.34	1.75	7.09	8.28	3.72	1.93	2.51	0.91	50.26
1783.	4.43	5.54	2.16	0.88	2.84	2.82	1.45	2.24	5.52	1.71	3.01	1.10	33.71
1784.	3.18	0.77	3.82	3.92	1.52	3.65	2.40	3.88	2.51	0.39	4.70	3.06	33.80
1785.	2.84	1.80	0.30	0.17	0.60	1.39	3.80	3.21	5.94	5.21	2.27	4. 2	31.55
1786.	6.91	1.42	1.62	1.81	2.40	1.20	1.99	4.34	4.79	5. 4	4.38	—	—
1787.	0.88	3.67	4.28	0.74	2.60	1.50	6.53	0.83	1.56	5. 4	4. 9	5. 6	36.24
1788.	1.60	3.37	1.31	0.61	0.76	1.27	3.58	3.22	5.71	0. 0	0.86	0.23	22.50
1789.	4.48	4.11	2.47	1.81	4. 5	4.24	3.69	0.99	2.82	5. 4	3.67	4.62	42.—
1790.	1.99	0.49	0.45	3.64	4.38	0.13	3.24	2.30	0.66	2.10	6.95	5.94	32.27
1791.	6.73	4.64	1.59	1.13	1.33	0.91	5.56	1.73	1.73	6.49	8.16	4.93	44.93
1792.	6. 7	1.68	6.70	4.08	3.00	2.78	5.16	4.25	5.53	5.55	1.65	2.11	48.56
1793.	3.71	2.32	3.33	3.19	1.21								

SUMMARY OF THE WEATHER.

1768. Begins with a fortnight's frost and snow; rainy during February. Cold and wet spring; wet season from the beginning of June to the end of harvest. Latter end of September foggy, without rain. All October and the first part of November rainy; and thence to the end of the year alternate rains and frosts.

1769. January and February, frosty and rainy, with gleams of fine weather in the intervals. To the middle of March, wind and rain. To the end of March dry, and windy. To the middle of April, stormy, with rain. To the end of June, fine weather, with rain. To the beginning of August, warm, dry weather. To the end of September, rainy, with short interval of fine weather. To the latter end of October, frosty mornings, with fine days.

The next fortnight rainy: thence to the end of November dry and frosty. December, windy, with rain and intervals of frost, and the first fortnight very foggy.

1770. Frost for the first fortnight: during the 14th and 15th all the snow melted. To the end of February, mild, hazy weather. The whole of March frosty, with bright weather. April cloudy, with rain and snow. May began with summer showers, and ended with dark, cold rains. June, rainy, checquered with gleams of sunshine. The first fortnight in July, dark and sultry; the latter part of the month, heavy rain. August, September, and the first fortnight in October, in general fine weather, though with frequent interruptions of rain: from the middle of October to the end of the year almost incessant rains.

1771. Severe frosts till the last week in January. To the first week in February, rain and snow: to the end of February, spring weather. To the end of the third week in April, frosty weather. To the end of the first fortnight in May, spring weather, with copious showers. To the end of June, dry, warm weather. The first fortnight in July, warm, rainy weather. To the end of September, warm weather, but in general cloudy, with showers. October, rainy. November, frost, with intervals of fog and rain. December, in general bright, mild weather, with hoar frosts.

1772. To the end of the first week in February, frost and snow. To the end of the first fortnight in March, frost, sleet, rain and snow. To the middle of April, cold rains. To the middle of May, dry weather, with cold piercing winds. To the end of the first week in June, cool showers. To the middle of August, hot, dry summer weather. To the end of September, rain with storms and thunder. To December 22, rain with mild weather. December 23, the first ice. To the end of the month, cold, foggy weather.

1773. The first week in January, frost; thence to the end of the month, dark rainy weather. The first fortnight in February, hard frost. To the end of the first week in March, misty, showery weather. Bright spring days to the close of the month. Frequent showers to the latter end of April. To the end of June, warm showers, with intervals of sunshine. To the end of August, dry weather, with a few days of rain. To the end of the first fortnight in November, rainy. The next four weeks, frost; and thence to the end of the year, rainy.

1774. Frost and rain to the end of the first fortnight in March: thence to the end of the month, dry weather. To the 15th of April, showers; thence to the end of April, fine spring days. During May, showers and sunshine in about an equal proportion. Dark, rainy weather to the end of the 3rd week in July: thence to the 24th of August, sultry, with thunder and occasional showers. To the end of the 3rd week in November, rain, with frequent intervals of sunny weather. To the end of December, dark, dripping fogs.

1775. To the end of the first fortnight in March, rain almost every day. To the first week in April, cold winds, with showers of rain and snow. To the end of June, warm, bright weather, with frequent showers. The first fortnight in July, almost incessant rains. To the 26th August, sultry weather with frequent showers. To the end of the 3rd week in September, rain, with a few intervals of fine weather. To the end of the year, rain, with intervals of hoar-frost and sunshine.

1776. To January 24, dark, frosty weather, with much snow. March 24, to the end of the month, foggy, with hoar-frost. To the 30th of May, dark, dry, harsh weather, with cold winds. To the end of the first fortnight in July, warm, with much rain. To the end of the first week in August, hot and dry, with intervals of thunder showers. To the end of October, in general fine seasonable weather, with a considerable proportion of rain. To the end of the year, dry, frosty weather, with some days of hard rain.

1777. To the 10th of January, hard frost. To the 20th of January, foggy, with frequent showers. To the 18th of February, hard, dry frost with snow. To the end of May, heavy showers, with intervals of warm, dry spring days. To the 8th July, dark, with heavy rain. To the 18th July, dry, warm weather. To the end of July, very heavy rains. To the 12th October, remarkably fine warm weather. To the end of the year, grey mild weather, with but little rain, and still less frost.

1778. To the 13th of January, frost, with a little snow: to the 24th January, rain: to the 30th, hard frost. To the 23rd February, dark, harsh, foggy weather, with rain. To the end of the month, hard frost with snow. To the end of the first fortnight in March, dark, harsh weather. From the first, to the end of the first fortnight in April, spring weather. To the end of the month, snow and ice. To the 11th of June, cool, with heavy showers. To the 19th July, hot, sultry, parching weather. To the end of the month, heavy showers. To the end of September, dry warm weather. To the end of the year, wet, with considerable intervals of sunshine.

1779. Frost and showers to the end of January. To 21st April, warm dry weather. To 8th May, rainy. To the 7th June, dry and warm. To the 6th July, hot weather, with frequent rain. To the 18th July, dry, hot weather. To August 8, hot weather, with frequent rains. To the end of August, fine dry harvest weather. To the end of November, fine autumnal weather, with intervals of rain. To the end of the year, rain with frost and snow.

1780. To the end of January, frost. To the end of February, dark, harsh weather, with frequent intervals of frost. To the end of March, warm, showery spring weather. To the end of April, dark, harsh weather, with rain and frost. To the end of the first fortnight in May, mild, with rain. To the end of August, rain and fair weather in pretty equal proportions. To the end of October, fine autumnal weather, with intervals of rain. To the 24th November, frost. To December 16, mild, dry, foggy weather. To the end of the year frost and snow.

1781. To January 25, frost and snow. To the end of February, harsh and windy, with rain and snow. To April 5, cold, drying winds. To the end of May, mild spring weather, with a few light showers. June began with heavy rain, but thence to the end of October, dry weather, with a few flying showers. To the end of the year, open weather with frequent rains.

1782. To February 4, open, mild weather. To February 22, hard frost. To the end of March, cold blowing weather, with frost and snow and rain. To May 7, cold, dark rains. To the end of May, mild, with incessant rains. To the end of June, warm and dry. To the end of August, warm, with almost perpetual rains. The first fortnight in September, mild and dry; thence to the end of the month, rain. To the end of October, mild, with frequent showers. November began with hard frost, and continued throughout with alternate frost and thaw. The first part of December frosty; the latter part mild.

1783. To January 16, rainy, with heavy winds. To the 24th, hard frost. To the end of the first fortnight in February, blowing, with much rain. To the end of February, stormy, dripping weather. To the 9th of May, cold, harsh winds (thick ice on 5th of May). To the end of August, hot weather, with frequent showers. To the 23rd September, mild, with heavy driving rains. To November 12, dry, mild weather. To the 18th December, grey, soft weather, with a few showers. To the end of the year, hard frost.

1784. To February 19, hard frost, with two thaws; one the 14th January, the other 5th February. To February 28, mild wet, fogs. To the 3rd March, frost, with ice. To March 10, sleet and snow. To April 2, snow and hard frost. To April 27, mild weather, with much rain. To May 12, cold, drying winds. To May 20, hot, cloud-less weather. To June 27, warm, with frequent showers. To July 18, hot and dry. To the end of August, warm, with heavy rains. To November 6, clear, mild autumnal weather, except a few days of rain at the latter end of September. To the end of the year, fog, rain, and hard frost (on December 10, the therm. 1 deg. below 0.)

1785. A thaw began on the 2nd January, and rainy weather with wind continued to January 28. To 15th March, very hard frost. To 21st March, mild, with sprinkling showers. To April 7, hard frost. To May 17, mild, windy weather, without a drop of rain. To the end of May, cold, with a few showers. To June 9, mild weather, with frequent soft showers. To July 13, hot, dry weather, with a few showery intervals. To July 22, heavy rain. To the end of September, warm, with frequent showers. To the end of October, frequent rain. To 18th of November, dry, mild weather. (Hay-making finished November 9, and the wheat harvest November 14.) To December 23, rain. To the end of the year, hard frost.

1786. To the 7th January, frost and snow. To January 13, mild, with much rain. To 21st January, deep snow. To February 11, mild, with frequent rains. 21st February, dry, with high winds. To 10th March, hard frost. To 13th April, wet, with intervals of frost. To the end of April, dry, mild weather. On the 1st and 2nd May, thick ice. To 10th May, heavy rain. To June 14, fine, warm, dry weather. From the 8th to the 11th July heavy showers. To October 13, warm, with frequent showers. To October 19, ice. To October 24, mild, pleasant weather. To November 3, frost. To December 16, rain, with a few detached days of frost. To the end of the year, frost and snow.

1787. To January 24, dark, moist, mild weather. To January 28, frost and snow. To February 16, mild, showery weather. To February 28, dry, cool weather. To March 10, stormy, with driving rain. To

March 24, bright, frosty weather. To the end of April, mild, with frequent rain. To May 22, fine bright weather. To the end of June, mostly warm, with frequent showers (on June 7, ice as thick as a crown piece.) To the end of July, hot and sultry, with copious rain. To the end of September, hot, dry weather, with occasional showers. To November 23, mild, with light frosts and rain. To the end of November, hard frost. To December 21, still and mild, with rain. To the end of the year, frost.

1788. To January 13, mild and wet. To January 18, frost. To the end of the month, dry, windy weather. To the end of February, frosty, with frequent showers. To March 14, hard frost. To the end of March, dark, harsh weather, with frequent showers. To April 4, windy, with showers. To the end of May, bright, dry, warm weather, with a few occasional showers. From June 28 to July 17, heavy rains. To August 12, hot, dry weather. To the end of September, alternate showers and sunshine. To November 22, dry, cool weather. To the end of the year, hard frost.

1789. To January 13, hard frost. To the end of the month, mild, with showers. To the end of February, frequent rain, with snow-showers and heavy gales of wind. To 13th March, hard frost, with snow. To April 18, heavy rain, with frost and snow and sleet. To the end of April, dark, cold weather, with frequent rains. To June 9, warm spring weather, with brisk winds and frequent showers. From June 4 to the end of July, warm, with much rain. To August 29, hot, dry, sultry weather. To September 11, mild, with frequent showers. To the end of September, fine autumnal weather, with occasional showers. To November 17, heavy rain, with violent gales of wind. To December 18, mild, dry weather, with a few showers. To the end of the year, rain and wind.

1790. To January 16, mild, foggy weather, with occasional rains. To January 21, frost. To January 28, dark, with driving rains. To February 14, mild, dry weather. To February 22, hard frost. To April 5, bright, cold weather, with a few showers. To April 15, dark and harsh, with a deep snow. To April 21, cold, cloudy weather, with ice. To June 6, mild spring weather, with much rain. From July 3 to July 14, cool, with heavy rain. To the end of July, warm, dry weather. To August 6, cold, with wind and rain. To August 24, fine harvest weather. To September 5, strong gales, with driving showers. To November 26, mild autumnal weather, with frequent showers. To December 1, hard frost and snow. To the end of the year, rain and snow, and a few days of frost.

1791. To the end of January, mild, with heavy rains. To the end of February, windy, with much rain and snow. From March to the end of June, mostly dry, especially June. March and April, rather cold and frosty. May and June, hot. July, rainy. Fine harvest weather, and pretty dry, to the end of September. Wet October, and cold towards the end. Very wet and stormy in November. Much frost in December.

1792. Some hard frost in January, but mostly wet and mild. February, some hard frost and a little snow. March, wet and cold. April, great storms on the 13th, then some very warm weather. May and June, cold and dry. July, wet and cool; indifferent harvest, rather late and wet. September, windy and wet. October, showery and mild. November, dry and fine. December, mild.

POEMS.

THE

INVITATION TO SELBORNE.

SEE Selborne spreads her boldest beauties round
The varied valley, and the mountain ground,
Wildly majestic ! what is all the pride
Of flats, with loads of ornament supply'd ?
Unpleasing, tasteless, impotent expense,
Compar'd with Nature's rude magnificence.
Arise, my stranger, to these wild scenes haste ;
The unfinish'd farm awaits your forming taste :
Plan the pavilion, airy, light and true ;
Thro' the high arch call in the length'ning view ;
Expand the forest sloping up the hill ;
Swell to a lake the scant, penurious rill ;
Extend the vista, raise the castle mound
In antique taste with turrets ivy-crown'd ;
O'er the gay lawn the flow'ry shrub dispread,
Or with the blending garden mix the mead ;
Bid China's pale, fantastic fence, delight ;
Or with the mimic statue trap the sight.
Oft on some evening, sunny, soft and still,
The Muse shall lead thee to the beech-grown hill,

To spend in tea the cool, refreshing hour,
Where nods in air the pensile, nest-like bower ;[a]
Or where the Hermit hangs the straw-clad cell,[b]
Emerging gently from the leafy dell ;
By Fancy plann'd ; as once th' inventive maid
Met the hoar sage amid the secret shade ;
Romantic spot ! from whence in prospect lies
Whate'er of landscape charms our feasting eyes ;
The pointed spire, the hall, the pasture-plain,
The russet fallow, or the golden grain,
The breezy lake that sheds a gleaming light,
'Till all the fading picture fail the sight.
Each to his task ; all different ways retire,
Cull the dry stick ; call forth the seeds of fire ;
Deep fix the kettle's props, a forky row,
Or give with fanning hat the breeze to blow.
Whence is this taste, the furnish'd hall forgot,
To feast in gardens, or th' unhandy grot ?
Or novelty with some new charms surprises,
Or from our very shifts some joy arises.
Hark, while below the village-bells ring round.
Echo, sweet nymph, returns the soften'd sound ;
But if gusts rise, the rushing forests roar,
Like the tide tumbling on the pebbly shore.
Adown the vale, in lone, sequester'd nook,
Where skirting woods imbrown the dimpling brook,

---

[a] A kind of an arbour on the side of a hill.

[b] A grotesque building, contrived by a young gentleman, who used on occasion to appear in the character of an hermit.

The ruin'd Convent lies ; here wont to dwell
The lazy canon midst his cloister'd cell ; [c]
While papal darkness brooded o'er the land,
Ere Reformation made her glorious stand :
Still oft at eve belated shepherd-swains
See the cowl'd spectre skim the folded plains.
To the high temple would my stranger go, [d]
The mountain-brow commands the woods below ;
In Jewry first this order found a name,
When madding Croisades set the world in flame ;
When western climes, urg'd on by Pope and priest,
Pour'd forth their millions o'er the delug'd east ;
Luxurious knights, ill-suited to defy
To mortal fight Turcéstan chivalry.
Nor be the Parsonage by the muse forgot ;
The partial bard admires his native spot ;
Smit with its beauties, loved, as yet a child,
(Unconscious why) its scapes grotesque, and wild.
High on a mound th' exalted gardens stand,
Beneath, deep valleys scoop'd by Nature's hand.
A Cobham here, exulting in his art,
Might blend the General's with the Gardener's part ;
Might fortify with all the martial trade
Of rampart, bastion, fosse, and palisade ;

---

[c] The ruins of a priory, founded by Peter de Rupibus, Bishop of Winchester.

[d] The remains of a preceptory of the Knights Templars ; at least it was a farm dependant upon some preceptory of that order. I find it was a preceptory, called the *preceptory* of *Sudington ;* now called Southington.

Might plant the mortar with wide threat'ning bore,
Or bid the mimic cannon seem to roar.
  Now climb the steep, drop now your eye below,
Where round the blooming village orchards grow ;
There, like a picture, lies my lowly seat,
A rural, shelter'd, unobserv'd retreat.
  Me far above the rest Selbornian scenes,
The pendent forests, and the mountain-greens
Strike with delight ; there spreads the distant view,
That gradual fades till sunk in misty blue :
Here Nature hangs her slopy woods to sight,
Rills purl between and dart a quivering light.

SELBORNE HANGER.

A WINTER PIECE.

TO THE MISS B*****S.

The Bard, who sang so late in blithest strain
Selbornian prospects, and the rural reign,
Now suits his plaintive pipe to sadden'd tone,
While the blank swains the changeful year bemoan.

How fall'n the glories of these fading scenes !
The dusky beech resigns his vernal greens ;
The yellow maple mourns in sickly hue,
And russet woodlands croud the dark'ning view.
Dim, clust'ring fogs involve the country round,
The valley, and the blended mountain-ground
Sink in confusion ; but with tempest-wing
Should Boreas from his northern barrier spring,
The rushing woods with deaf'ning clamour roar,
Like the sea tumbling on the pebbly shore.
When spouting rains descend in torrent tides,
See the torn zigzag weep its channel'd sides :
Winter exerts its rage ; heavy, and slow,
From the keen east rolls on the treasur'd snow ;
Sunk with its weight the bending boughs are seen,
And one bright deluge whelms the works of men.
Amidst this savage landscape, bleak and bare,
Hangs the chill hermitage in middle air ;
Its haunts forsaken, and its feasts forgot,
A leaf-strown, lonely, desolated cot !
Is this the scene that late with rapture rang,
Where Delphy danc'd, and gentle Anna sang ;
With fairy-step where Harriet tripp'd so late,
And on her stump reclined the musing Kitty sate ?
Return, dear nymphs ; prevent the purple spring,
Ere the soft nightingale essays to sing ;
Ere the first swallow sweeps the fresh'ning plain,
Ere love-sick turtles breathe their amorous pain ;
Let festive glee th' enliven'd village raise,
Pan's blameless reign, and patriarchal days ;

With pastoral dance the smitten swain surprise,
And bring all Arcady before our eyes.
Return, blithe maidens; with you bring along
Free, native humour, all the charms of song;
The feeling heart, and unaffected ease,
Each nameless grace, and ev'ry power to please.

Nov. 1, 1763.

ON THE RAINBOW.

"Look upon the Rainbow, and praise him that made it: very beautiful is it in the brightness thereof." Eccles. xliii. 11.]

On morning or on evening cloud impress'd,
Bent in vast curve, the wat'ry meteor shines
Delightfully, to th' levell'd sun oppos'd:
Lovely refraction! while the vivid brede
In listed colours glows, th' unconscious swain
With vacant eye gazes on the divine
Phænomenon, gleaming o'er th' illumin'd fields,
Or runs to catch the treasure which it sheds.
Not so the sage, inspir'd with pious awe;
He hails the federal arch; [a] and looking up
Adores that God, whose fingers form'd this bow
Magnificent, compassing heav'n about

---

[a] Gen. ix. 12—17.

With a resplendent verge. "Thou mad'st the cloud,
"Maker omnipotent, and thou the bow;
"And by that covenant graciously hast sworn
"Never to drown the world again:[b] henceforth,
"Till time shall be no more, in ceaseless round,
"Season shall follow season; day to night.
"Summer to winter, harvest to seed time,
"Heat shall to cold in regular array
"Succeed."—Heav'n taught, so sang the Hebrew bard.[c]

A HARVEST SCENE.

Wak'd by the gentle gleamings of the morn,
Soon clad, the reaper, provident of want,
Hies cheerful-hearted to the ripen'd field;
Nor hastes alone; attendant by his side
His faithful wife, sole partner of his cares,
Bears on her breast the sleeping babe; behind
With steps unequal trips her infant train:
Thrice happy pair, in love and labour join'd!
All day they ply their task; with mutua
Beguiling each the sultry, tedious hours.
Around them falls in rows the sever'd corn,
Or the shocks rise in regular array.
But when high noon invites to short repast,

---

[b] Gen. viii. 22,

[c] Moses.

Beneath the shade of shelt'ring thorn they sit,
Divide the simple meal, and drain the cask:
The swinging cradle lulls the whimp'ring babe
Meantime; while growling round, if at the tread
Of hasty passenger alarm'd, as of their store
Protective, stalks the cur with bristling back,
To guard the scanty scrip and russet frock.

ON THE EARLY AND LATE BLOWING OF THE VERNAL AND AUTUMNAL CROCUS.

SAY, what impels, amidst surrounding snow
Congeal'd, the Crocus' flamy bud to grow;
Say, what retards amidst the summer's blaze
The autumnal bulb, till pale declining days?
The *God of Seasons!* whose pervading power
Controls the sun, or sheds the fleecy shower;
He bids each flower his quick'ning word obey,
Or to each lingering bloom enjoins delay.

ON THE DARK, STILL, DRY, WARM WEATHER,

OCCASIONALLY HAPPENING IN THE WINTER MONTHS.

Th' imprison'd winds slumber within their caves
Fast bound : the fickle vane, emblem of change,
Wavers no more, long-settling to a point.
All Nature nodding seems compos'd : thick steams
From land, from flood up-drawn, dimming the day,-
" Like a dark ceiling stand :" slow thro' the air
Gossamer floats, or stretch'd from blade to blade
The wavy net-work whitens all the field.
Push'd by the weightier atmosphere, up springs
The ponderous Mercury, from scale to scale
Mounting, amidst the Torricellian tube.[d]
While high in air, and pois'd upon his wings,
Unseen, the soft, enamour'd wood-lark runs
Thro' all his maze of melody ;—the brake
Loud with the blackbird's bolder note resounds.
Sooth'd by the genial warmth, the cawing rook
Anticipates the spring, selects her mate,
Haunts her tall nest-trees, and with sedulous care
Repairs her wicker eyrie, tempest torn.
The ploughman inly smiles to see upturn
His mellow glebe, best pledge of future crop.

---

[d] The Barometer.

With glee the gardener eyes his smoking beds:
E'en pining sickness feels a short relief.
  The happy school-boy brings transported forth
His long-forgotten scourge, and giddy gig:
O'er the white paths he whirls the rolling hoop,
Or triumphs in the dusty fields of taw.
  Not so the museful sage:—abroad he walks
Contemplative, if haply he may find
What cause controuls the tempest's rage, or whence
Amidst the savage season winter smiles.
  For days, for weeks, prevails the placid calm.
At length some drops prelude a change: the sun
With ray refracted bursts the parting gloom;
When all the chequer'd sky is one bright glare.
  Mutters the wind at eve: th' horizon round
With angry aspect scowls: down rush the showers,
And float the delug'd paths, and miry fields.

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